HYGEIA

A JOURNAL OF INDIVIDUAL AND COMMUNITY HEALTH

Published by the American Medical Association

IN THIS ISSUE

Health Examinations

The Philippines

"Summer Complaint"

Nature's Birthday Gift

The Conquest of Hydrophobia

Health News and Reviews

The Child's Health

June, 1923 — *25 Cents*

Who will be ill in your family this year?

Over 2,900,000 cases of infectious disease were reported to health authorities last year. Enough diseased people to populate a city almost as large as Chicago! Practically all due to ignorance, carelessness or wilful negligence.

Preventable diseases! Think of it! Illness that could have been avoided by simple, ordinary precaution. Sorrow, suffering, loss and expense that were unnecessary.

Most people admit the wisdom of consulting a reputable physician for serious illness. But too often, the damage is then already done. "Sticking out" against a supposed minor ailment frequently gives firm foothold to a disease that prompt professional treatment would have nipped in the bud.

Good health is your greatest asset. Conserve it and guard it jealously. Have a thorough examination made by a competent doctor at regular intervals. Always consult him when there is the least doubt about ordinary sickness. Be on the safe side and you will prolong life many years.

Not only to yourself and your loved ones do you owe it to be careful of your health, but the whole community in which you live should be considered. It is not "molly-coddling" to be sure about signs of illness, because others may be infected while you are making up your mind whether you have a serious trouble or not. You yourself may escape by the natural strength of your body to combat the germ. Others may not be so fortunate and your careless sneeze or cough while causing you temporary inconvenience, may send another to his grave.

Give heed to your health today and you will be well tomorrow. It is easier to remain healthy than it is to regain health after an illness and your doctor would much rather help you avoid all disease than he would to cure you after you get it. Arrange for yourself and all members of your family to be regularly examined by your family physician.

This "Consult Your Doctor" campaign is part of a nation-wide movement instituted by The Abbott Laboratories to prevent disease and check its spread.

For 32 years The Abbott Laboratories have been identified with medical research and pharmaceutical development.

Sanitation is one of the most powerful factors in the prevention and control of disease. The more germs that are destroyed before they have an opportunity to come in contact with the human body, the less effort is required for the system to throw off the toxic product of infection.

Towels, sheets and other soiled linen from the sickroom, before being laundered, should be soaked for one hour in a dilution of IZAL, Abbott's latest contribution to sanitation. Sputum, urine and other excreta should be treated with IZAL to destroy their infectivity.

After any contagious disease the ward or sickroom may be fumigated by means of steam from IZAL.

A free sample and booklet telling the interesting story of IZAL and giving many suggestions on sanitation, will be sent free to any address

IZAL is not intended for internal use, nor recommended for the treatment of disease, but is used by physicians, hospitals and boards of health to prevent infections by destroying millions of lurking germs.

IZAL is twelve times as strong as carbolic acid when tested by the U. S. Hygienic Laboratory method, yet it is perfectly safe for home use. Accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

THE ABBOTT LABORATORIES

NEW YORK SAN FRANCISCO

IZAL THE HIGH POWER DISINFECTANT

IZAL DEPT. 4757 Ravenswood Ave., Chicago

SEATTLE LOS ANGELES

HYGEIA, a Journal of Individual and Community Health, is published monthly by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Yearly subscription price, $3.00 in the United States and Possessions and Mexico; Canada, $3.30; Foreign, $3.50. Volume 1, Number 3. Entry as second-class matter applied for at the postoffice at Chicago, Ill., under the Acts of March 3, 1879.

HYGEIA

A JOURNAL OF INDIVIDUAL AND COMMUNITY HEALTH

Published by the American Medical Association

VOLUME 1 JUNE, 1923 NUMBER 3

CONTENTS

PAGE

FRONTISPIECE—HENRY MILLER IN GUITRY'S PLAY "PASTEUR" 134

WHAT'S A HEALTH EXAMINATION, ANYWAY? 135
Haven Emerson

THE PHILIPPINES AND HEALTH IDEALS 140
Victor G. Heiser

SUMMER DIARRHEA OF INFANTS 145
Victor C. Vaughan

MOTHER'S MILK—NATURE'S BIRTHDAY GIFT TO THE BABY 149
Julius H. Hess

THE CONQUEST OF HYDROPHOBIA 155
Morris Fishbein

HAY FEVER: THE EARLY SUMMER TYPE 163
I. Chandler Walker

PATENT MEDICINES. III. THE PART PLAYED BY THE TESTIMONIAL 170
Arthur J. Cramp

SCIENTIFIC NUTRITION AND PUBLIC HEALTH 175
E. V. McCollum

FIRST AID TO MEDICAL TERMS 178
Watson Davis

PLAIN FACTS ABOUT HEALTH AND DISEASE 180
Health News of the Month 180
Vacation Typhoid Fever 182
Poisoning from Sprayed Fruits and Vegetables 182
The Inhalation of Coal Dust, Anthracosis 183
Miners' Nystagmus 183
Diphtheria 184
Health a By-Product of Economic Development 185
Yoohoo Skinnay! The Water's Fine! 185
Needlessness of Canning Powders 186
Sacha Guitry's "Pasteur" 186

HEALTH NEWS AND VIEWS 187

NURSERY SONG 192
Mildred W. Stillman

PERCIVAL JONES AND TIMOTHY LEE 193
Leslie Forgrave

ROUND SONG 194
Mrs. Frederick Peterson

BOOK REVIEWS 195

QUESTIONS AND ANSWERS 196

HEALTH REVIEWS 198

OH! VERY WELL 201

Copyright, 1923, by the American Medical Association. All rights reserved.
Address all communications to HYGEIA, *535 North Dearborn Street, Chicago, Ill.*

White Studio

HENRY MILLER IN GUITRY'S PLAY "PASTEUR"

A. G. Andrews as Theodore Meister, William Pearce as Joseph Meister, Albert Bruning as Dr. Grancher, and Henry Miller as Louis Pasteur.

(See "The Conquest of Hydrophobia," this issue, p. 155)

[The door opens slowly and little JOSEPH MEISTER *comes in supported by his* GRANDFATHER *and the* STUDENT. *The child has his hands and one leg covered with bandages.]*

PASTEUR *(raising his head at last). What? . . . Oh! . . . Bitten?*

STUDENT. *Yes.*

PASTEUR. *Hurry, hurry! Come here . . . come, my little boy . . . don't be afraid . . . surely, don't be afraid of me . . . Come here . . .*
[And he has him sit down facing him.]

THE GRANDFATHER. *You're Monsieur Pasteur, monsieur?*

PASTEUR. *Yes, monsieur. . . . Now tell me quickly how it happened.*

THE GRANDFATHER. *It happened very simply! . . . The child was going to school at Meissengott . . . when the dog met him and jumped at him . . . and being a great deal stronger, naturally—the child fell down . . . and he only thought of protecting his face with his hands—while the animal was biting him! . . . A stone mason who was passing saw the struggle, and came with a bar of iron . . . and pounded the dirty brute so that it ran away . . . and then lifted the child who was covered with blood and brought him home to us.*

What's a Health Examination, Anyway?

HAVEN EMERSON

MOTHER had said, "Of course that depends. Are you little or big, at work or at play, in school or shop, a small girl or a big boy, already a grandfather, or a mother to be sewing on baby clothes soon to be used?"

"Well anyway, the teacher is talking about it as a sure cure for sickly children, the life insurance agent is advertising it as a gold mine for the company, as well as a life preserver for Uncle Jim who works at the mill, and those nurses who came to talk at Aunt Jane's before the Mothers' Club said it was something wonderful how many kinds of sicknesses there were that would kill us if we waited until we felt them hurt or weaken us. And then the dear doctor himself said the greatest fun he had all the year round was keeping the well babies well at that 'squalling bee' he runs down at the Health Office," declared Big Sister.

"But that's not all," burst in the neighbor from next door, "for I was at the county seat and saw the special film they put on when all the surgeons were telling how cancer could be prevented often, and at any rate cured mostly, if we'd have a kind of regular looking-over by a careful doctor every year, after we are forty or so."

"And, Mother, do you remember that when they had the seal sale last Christmas how every one was saying we took more care of the tin Lizzie and the old dining room clock than we do of our own insides?"

"Well," finally put in pater familias, "this all sounds pretty much like the sort of rigmarole the Rotary Club is trying to 'put over' for the whole crowd, and what the new 'super' says he means to have at the mill; a real stock-taking each year, not only of our product but of the producer, the Johnny on the job. Of course we suppose there is money in it for the business, but even so, if half they tell of it is so, it will do every mother's son of us a heap of good to have a once-over to keep us going, and going straight and strong.

"What do you say, Mother, shall we ask the doctor to have supper with us on Sunday and tell us the rights of the matter? It seems as if we ought to be in it as a family if it is such a good thing for so many kinds of folks all about town."

So the evening came and, in spite of the tinkling of the telephone which kept the doctor on a rather uneasy seat, the family had a splendid hour of questions and answers all around the table, so that now they are real authorities on health examinations and mean to be as regular as birthdays with an annual call on the doctor, to dare him to find a flaw. What the doctor said was pretty much a combination of all the health talks they'd heard from all the different kinds of fanatics that had held weeks and drives and campaigns and extension lectures thereabout for the past some years. Here is something of what he tried to tell the family about health examinations.

HAVEN EMERSON, M.D., formerly health commissioner of New York City, is now professor of public health administration, Columbia University College of Physicians and Surgeons, and a member of the Council on Health and Public Instruction of the American Medical Association. Dr. Emerson is among the many who are trying to spread the gospel of health—keeping health through a physician's checking up by periodic examinations instead of pursuing health after it has been consistently disregarded.

What the Doctor Said

"Almost all of you when you go to a doctor's office or ask the doctor to call, have a pain or ache, a broken bone or a cough, a fear or worry, or real sickness of some kind. The doctor naturally enough does his best to give the right name to the trouble and, what is more important, to set the breaks and get all the parts of the body going again in first class order. As soon as the pain or fever is gone and you are back at work the whole thing is forgotten, unless you have a doctor who just sits down when he makes his last call and tells you how it probably happened, and how you can prevent a return of the trouble, or what to expect in the way of later results unless you do fairly by yourself.

"Patients and physicians have rather specialized in sickness and let the real job of keeping health go by on the other side of the street, in fact, have thought of health as just the absence of sickness. Well, it's no such thing, but something to go out and get, and fight for, and search for and expect and demand and make sacrifices for, because without it we are only up and about, kind of half alive. And there's a health officer in North Carolina who says that not more than 13 per cent. of us are really in fine and dandy health, anyway. Well, just being up and about is not being healthy.

The New York Tuberculosis Association does not wait until people are grown up to examine them for tuberculosis. They begin with the babies to try to find traces of disease when it can still be routed.

The Fight Against Tuberculosis Roused Us

"The teaching about tuberculosis in the past twenty years has made everyone see that if he expected to be cured, the 'bug,' the *Bacillus tuberculosis,* must be caught when it first begins to make a rumpus and create certain rattlings in the lungs. They say in New York that about 70 per cent. of the thousands who go to the tuberculosis clinics for advice have no lung trouble at all, so common it is nowadays to go on the first sign of a little cough or indigestion or loss of weight and have a real health examination.

Baby Saving Came First

"Then when the antituberculosis campaign was well under way, people waked up to the fact that hustling around to treat sick babies in the summer for diarrhea and cholera morbus would never save many lives. So the good people devoted their time to baby saving, and the children's specialists and the health officers and the visiting nurses agreed on a plan that has worked out beautifully for the last fifteen years; and, by the way, this plan was made and carried out by a woman physician—one of the greatest life savers of the generation. This new idea was to catch a healthy baby, and by the simple device of a monthly examination to see if the growth in length and weight, the activity of skin, the muscles, and the bowels were all right, and to teach the mother what to do to keep the baby growing and free from colic and diarrhea, rickets, and scurvy. The results have been so beautiful that every mother nowadays expects to have her baby watched for its health during the first year or two, either by her own physician or at one of the many baby stations. Although the health department baby stations are wonderful educators of mothers, they would not be needed if the mothers understood that their 'sick doctors' are really the best 'well doctors,' who are only too happy to teach and guide the mother and baby in health instead of answering calls only in times of trouble. These visits of the baby every month or two to the family doctor are the Simon-pure original health examinations.

The School Children Had Their Turn

"Next we made a great jump to the children in school. Wherever teachers and parents are really playing the game of life fairly by the children, they have arranged that every kiddie, when he enters school, and two or three times before he graduates, shall have a careful study of heart, lungs, eyes, throat, teeth, back, and joints, so that the many handicaps, little and big, which often spoil the chance of learning, and later of working, may be corrected early. These medical inspections in school are just what we mean by health examinations, except that unfortunately the schools and the health departments provide too few doctors to give most of the children more than a superficial and incomplete inspection.

The Grown-Ups Came Next

"After the tuberculosis dispensaries, and the baby health stations, and the school medical inspections were understood and adopted over the country, thoughtful folks—doctors, nurses, health officers, school teachers, and many others—began to notice how many of the grown people who came to learn whether or not they had tuberculosis were already far advanced in various other sicknesses, such as kidney and heart diseases, for which they had not been to a doctor, since the symptoms were still too slight and mild to attract their attention. Many of these people were not only freed from the worry about tuberculosis which they suspected, but were warned in time about other damages to their health so that by proper changes in their work and diet and habits of life they could

What a Big Boy Am I?

The child welfare and health organizations check up on the health of children before they start to school.

(Courtesy of U. S. Bureau of Education.)

cure or check them before they were disabled by serious sickness.

Expectant Mothers Were Advised

"Again, at the baby stations many a mother came to the doctor with her little one, still in the early weeks of life, already so seriously diseased from conditions which had existed in the mother before the child was born that no help could be given. It was noticed that about one fourth of all the babies who died in the first year of life died within the first month, and that the cause of death was usually some conditions of the mother which had developed while the baby was growing, or infections about which the mother herself did not know. All this pointed to the need of having expectant mothers advised during the months of their waiting, in order to help them keep their health. When this was done, half the deaths of babies in the first month of life were prevented. A pretty good kind of health examination, don't you think? And yet not even 10 per cent. of the mothers who are bearing children in the United States receive this guardianship and protection. They'll soon require it of their doctors, and these doctors will gladly provide it if the parents will only think of the need, not at the time the baby is born, but at least for the last six months the mother is carrying the child before birth.

The Cause of Defects Was Traced

"Finally, it was found that most of the defects of growth, of lungs, heart, eyes, and teeth of children when they first came to school had their beginnings between the ages of two and five years, the so-called runabout age, or preschool period when most of the infections and the common contagious diseases of children are spread. Of course, if the mothers and fathers of the children had known that anything was going wrong with their little toddlers they would have taken pains to have them treated promptly. But you see, most of these difficulties which at the age of six seem of great importance to the school doctor and teacher really are not noticed by the child or by the parents, and probably never will be recognized in the early stages unless parents make it a habit to take each child to the doctor at least once a year, when the child seems in good health, to have a careful medical examination. Much of the interference with growing, with learning at school, and with working in later years can be prevented by keeping watch on a child's health, as well as by having its sicknesses treated during these early years.

"Many of the states and older cities now require a thorough health examination of all children who want to go to work before they are sixteen years old, and in New York City alone thirteen thousand children are examined each year, and among these school children last year three thousand five hundred were found to have such serious defects of growth, hearing, or strength of heart or lungs that they had to be denied their working papers until the defects were remedied.

The Employers Became Interested

"To make a long story short, these findings among children and grown-ups so impressed the people who employ men and women in large numbers in shops and factories, that it has grown to be a custom to have each new employee examined to see if he or she is in sound health. There are many angles to this kind of health examination, and the workers and the employers have not always agreed, but in the main the practice is spreading widely and rapidly. Sometimes the spirit of this kind of industrial health examination is in the interest only of the employer; he is looking only at the dollar end of the service. That's but natural, and if he excludes from his printing shop a new hand who has tuberculosis of the lungs because he thinks he'd be a poor, sick kind of a workman, he is

Here the badge of the New York Tuberculosis Association tells of the work with growing children —and it does not stop with any age.

The purpose of the physical examination is to discover a child's strong points as well as its weaknesses so that its routine may be adapted to its individual needs.

(Courtesy of the U. S. Bureau of Education.)

doing a service to those already at work by shutting him out. If the examining doctor finds a man applying for work in the machine shop who has defects of hearing and sight which might make him a serious danger because he can't see and answer signals quickly and accurately, it is not only the company's profits, but also the safety of the other workmen that he is protecting.

"Many of the unions are requiring an annual health examination of their members because they find this the best way to prevent the illnesses which cost their sick benefit funds so much and fill their union hospitals with patients with tuberculosis and chronic nervous diseases.

"Of course, such examinations have been required for many years by Uncle Sam for his army, navy, and public health services and for many of the civil service positions.

Every One Needs It

"Perhaps you think now it is time for me to tell you what a health examination is, since I've given this long story about how it came to be so important and so much used. Honestly speaking, it is practically the same careful complete study of a person's life story and of his physical condition which is made by every thorough physician and in every up-to-date hospital when a new patient comes for a diagnosis and treatment of disease. However, as there is no hurry about this kind of examination it can be arranged for at the entire convenience of the doctor and the patient, that is, by appointment, instead of as a hurry-up call or emergency job to be fitted in as well as possible during a crowded office hour.

"Suppose you want such an examination, you Uncle Jim, now that you are about forty-five. Or Sally here feels she'd be glad to know that she is in perfect health, as she thinks she is, after these last five years of school teaching, and surely before she is married in June. When you ask for a health examination I shall send you a sheet of paper with a lot of questions for you to answer, and bring with you all filled out at the time of the appointment. Of course, for young children the mother answers the questions on the spot.

"Before examining your eyes, teeth, heart, lungs, and recording your blood pressure and other conditions, I want to know exactly how you feel, eat, sleep, work, what your home circle is like, and how you get along with people, your play, your worries. Well, yes, I do know these points in the story of many of my old family patients, but they are not just what I have to know in the presence of acute illness, although all these facts are helpful in deciding whether a person is leading a well-rounded, useful, happy—and that means a healthy—existence. With these facts before me and time to make the simple tests at the office I then make very much the kind of medical examination that every student gets at the state university and every officer in the army has each year. It will take altogether about three quarters of an hour and when we are through I'll tell you precisely what I find that is right and what is wrong or out of gear with you according to your age and occupation. It may be that I'll ask you to be a bit more careful about regular and sufficient sleep, or perhaps you must begin to cut down in your eating of potatoes and bread and pastry and sweets, or that you must slow up a bit with all the outside duties you have taken on which keep you keyed up too much to be able to rest.

"And how much more intelligent a way to use our knowledge of the causes of disease and the signs of them! Health, you see, is not the absence of sickness alone, but the product of our forebears, of our surroundings, and of our

Having one's ears examined is a fairly pleasant process and having it done periodically may prevent some very unpleasant processes.

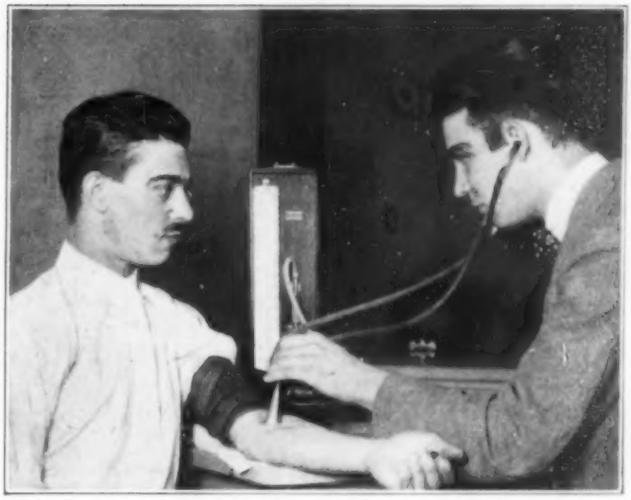
own conduct of life. We doctors believe that the science of medicine has much more to offer you by teaching the way to be healthy than in treating sicknesses that are already so far advanced that you yourselves are troubled by them."

"Will this examination keep us from having cancer or colds or rheumatism, or having to wear stronger glasses as we grow older?" Mother asked.

"Yes and no! Many a person has been found with early cancer of the lip, or skin, or breast, at a stage when quick and simple surgical removal has cured the trouble for good and all. And many a person has been so taught to avoid constant irritation of hands and skin in work that he has avoided one of the common causes of cancer. Many a cold is the result of poor conditions of health, particularly in children who neglect the daily bowel movement, or are improperly clothed and often overfed and allowed to sleep in rooms with closed windows. And many a child with large infected tonsils has been spared rheumatism and heart disease, that are caused by just such tonsils, by the warning of the danger and the removal of the tonsils to which the mother has consented.

"Health examinations won't prevent old age or the gradual increase of far-sightedness or old-sightedness that comes on at about forty-five years or soon after, but many tens of thousands of persons whose records of these examinations have been studied have not only been helped to live longer, but also to be sturdier and healthier, and enjoy more comfort and happiness by following the advice of the physicians who have made such an examination as I have described.

"Now it's time for me to run off. I hope you'll not think I've been trying to beat up trade for the doctors. On the contrary, there would be need of fewer doctors all over the country if people got the idea that doctors are trained to prevent sickness as well as to treat it. I do believe, though, that lots of folks live in a kind of fool's paradise, thinking that because they can keep going they are in good health. Of course it is a fine thing to forget little troubles that turn up every day, but that is a very different matter from running such chances with the wonderful machines, our bodies, as most of us do.



The periodic examination should include a determination of the blood pressure, which often is an index to beginning ailments.

"One word more, and I'm through. Let the men, women, and children of your home, your school, your farm, your shop, or your office have as much chance as you give your watch, your motor car, or your thoroughbred mule. See that each one of your people has an overhauling once a year by a physician who knows what health, as well as what sickness, is."

What the Family Did About It

After the doctor had gone they just couldn't help agreeing with him, and it all came down to deciding which one of them should go first, and they thought it was up to the oldest and youngest of the household to lead off.

Perhaps another time I can tell you what the doctor found when he put each of them through the health examination.

PLUTARCH SAID

For diseases do not either rob or spoil us of so much business, hope, journeys, or exercise as they do of pleasure; so that it is no way convenient for those who would follow their pleasure to neglect their health. There are diseases which will permit a man to study philosophy and to exercise any military office, nay, to act the kingly part. But the pleasures and enjoyments of the body are such as cannot be born alive in the midst of a distemper, or if they are, the pleasures they afford are not only short and impure, but mixed with much alloy, and they bear the marks of that storm and tempest out of which they rise. . . . Health is to pleasure as still weather to the halcyon, giving it a safe and commodious birth and nest. Prodicus seems elegantly enough to have said that of all sauces fire was the best; but most true it is to say that health gives things the most divine and grateful relish.

The Philippines and Health Ideals

VICTOR G. HEISER

THE people of the United States always have been interested in promoting the welfare of humanity throughout the world. They have taken much pride in the accomplishments in the field of public health by American sanitarians in tropical dependencies. When it is recalled that up to 1898 our country had no experience in tropical health problems, and that since that time the cause and manner of transmission of yellow fever have been discovered, the disease eradicated from Cuba and Panama, plague driven from the Philippines, smallpox controlled, the cause of anemia in Porto Rico demonstrated, the treatment of leprosy placed on a scientific basis, and machinery created for dealing effectively with a multitude of disease problems, there is real justification for that pride.

VICTOR G. HEISER, M.D., is director for the East of the International Health Board. He has studied disease and health in many countries, particularly in the tropical countries. He was primarily connected with the work of stamping out plague and cholera and of building hospitals in the Philippines. Some idea of this campaign and what similar campaigns might do for the United States at home and for other countries is presented in this paper.

The territorial acquisitions of the United States following the Spanish-American War placed a responsibility on the American sanitarian which he has nobly discharged. From the knowledge acquired through these new experiences he was able to create health conditions which made the construction of the Panama Canal practicable and served to establish a standard for sanitation that the whole civilized world is endeavoring to follow.

In the far-away Philippines the banner of public health was planted immediately after Dewey's victory. The funds were meager; the problems of disease were enormous. The work there differed greatly from that attempted by the United States in other possessions. Almost from the beginning it was done under civil rather than military auspices, and the cost was met by the island revenues. As the country is largely undeveloped, and its tax rate one of the lowest in the world, the revenues have been decidedly slender. The surprising results were accomplished with a yearly expenditure of approximately ten cents per capita. The population of the islands has increased from 7,000,000 in 1900 to 10,000,000 in 1920. Since these people are scattered over 100,000 square miles of tropical territory, on more than 300 islands, their inaccessibility and the difficulty of communication is apparent. It is therefore all the more encouraging that such small sums of money have produced such good results. To the United States, in which, during the last few years the reduced revenues for various health projects have often given rise to despair, accomplishments in the Philippines should be evidence that there is still reason for optimism.

Health Conditions in the Philippines in 1898

At the time of the American occupation, our sanitarians in the Philippines were confronted with many problems: With the exception of a water system which was available for part of Manila, and perhaps an occasional minor installation, there was not a reservoir, pipe line, or artestian well for the 10,000,000 people. Even the water for the city of Manila was known to be grossly polluted. Sections of the city with a population of from 5,000 to 25,000 were built up with houses so close together that there was no room for streets or alleys. Entrance and exit in these sections had to be made through passages under the houses. As most of the houses were built up over tidal flats, the difficulties in the situation can well be imagined. There were practically no building laws, and the results were such as are frequently seen in oriental countries, homes with small dark interiors and little light or ventilation. Street cleaning was most indifferently carried out, and garbage and filth accumulated in back yards and on the streets. Tuberculosis was probably responsible for at least 50,000 deaths each year in the Philippines. There was no food law in the modern sense. Perishable provisions were sold under insanitary conditions. The vilest class of food products was shipped in from abroad. One was almost inclined to believe that bad health in the tropics was largely due to the miserable food that was shipped from the temperate zone.

There was no provision for the insane; about 3,000 of these unfortunate persons were left without adequate care. Occasionally those who were tied under houses for safe keeping were burned in the conflagrations which were so common.

Plague and cholera were firmly intrenched. In one year more than 100,000 persons died of cholera alone. Smallpox claimed about 40,000 victims annually. There was practically no inspection of animals before slaughter, nor were there suitable slaughter houses.

Hospitals with modern operating rooms and surgical equipment were practically unknown for the masses. Persons were dying on every hand of diseases that could have been cured by ordinary medical procedures. It was not uncommon to find victims horribly deformed following injuries or diseases that could have been cured without deformity if skilled attention and facilities had been available. More than half a million persons lived like savages, and for them there was no medical relief.

Maritime quarantine was often conducted on a basis of graft. The natural result of such methods was the frequent introduction from nearby foreign countries of dangerous communicable diseases, such as plague, cholera, leprosy, and smallpox. More than 5,000 lepers were at large in the islands. A few hundred were cared for by charity, but there was no attempt to segregate lepers with a view to avoiding the danger of infection or bringing the disease under control. The ravages of malaria were appalling. It was estimated that between 35,000 and 40,000 persons died annually from this one disease, not to mention the suffering of the hundreds of thousands who were not killed by the infection. Imitation quinine pills were frequently sold at fabulous prices, and the people had no means of redress for this intolerable deception.

The type of house made rat proof with hubs on posts, used for centuries by wild tribes of northern Luzon. The hanging baskets are chicken coops; the rats cannot get at them either.

Changes Under American Administration

Health conditions in the Philippines made a powerful appeal to American idealism, and the country readily gave strong moral support to those who undertook to improve these conditions, doing much to hearten them in their formidable task. Progress has necessarily been slow, and much remains to be done. Many of the results, however, have been gratifying.

Control of Leprosy

One of the great problems that confronted the health administration was the proper care of victims of leprosy and the development of methods for the control of the disease. It is generally conceded that leprosy was first introduced into the Philippines from Japan several hundred years ago. Since then it has spread throughout the hundreds of islands of the archipelago. In 1905, the number of victims was variously estimated up to 10,000. The efforts of centuries toward the cure of this disease had yielded practically nothing. It was discouraging to segregrate thousands of lepers on an isolated island without being able to promise them a cure or even any great improvement. The fact that isolation of the leper prevents the spread of the disease makes no great appeal to the victim. Although prior to American occupation a few hundred of the many thousands of lepers had been cared for in special hospitals as objects of charity, no serious efforts to stay the spread of leprosy had been attempted. Soon after the coming of the Americans the problem was taken in hand. While the island of Culion was being prepared for the lepers, a

One of Manila's streets before drainage was introduced.

diligent search of the literature was made with the hope of finding a suitable remedy. Many were tried, but few had any effect. For a time the x-ray appeared to be promising, but in the end the results were disappointing. A study of the history of the treatment in many lands disclosed the fact that while remedies came and went, chaulmoogra oil held a place of its own. For several centuries the natives of India had known that by chewing the leaves, bark and nuts of the chaulmoogra tree the leper often improved his condition. Eventually the oil was pressed from the nut and taken by mouth. About 1905, Dyer of New Orleans reported several cures by the use of crude chaulmoogra oil taken internally. Efforts to repeat these results in the Philippine Islands were not very satisfactory because the oil was so nauseating that only an occasional person could take enough to derive benefit. The house physician at San Lazaro Hospital, Manila, was then asked to try various modes of introducing the drug into the body, with the hope that nausea could be prevented. Enemas, capsules to be digested in the small intestine, and other methods were tried. Finally, a chemical firm suggested that the oil might be given hypodermically if camphor was added. This method proved fairly successful, and for the first time in the world's experience a considerable number of lepers were cured, and a bright ray of hope held out to sufferers from this disease. These successes stimulated further research in many parts of the world. On publication of the results, the treatment was tried with gratifying success in many other countries. Soon afterward, Rogers, in India, extracted certain active principles from chaulmoogra oil which produced results in a shorter time. Later, Dean, Hollman, McDonald in Hawaii, and others began the use of ethyl esters of chaulmoogra oil with even more encouraging results. A tremendous stimulus has been given to the use of the ethyl esters in the Philippines by the interest of the new governor, General Leonard Wood, and now more than 4,000 lepers confined at Culion Leper Colony are regularly taking the treatment. Already scores of lepers have been sent home as cured. About fifteen years ago the United States government made available funds to support research work in leprosy in Hawaii. It will be apparent, therefore, that America has had a very honorable part in bringing relief to unfortunate victims whose disease has baffled the efforts of previous ages.

Eradication of Plague

With a reasonable amount of intelligent effort, plague can be controlled; but its eradication is difficult, and seldom has been accomplished. The Philippine Islands serve as one

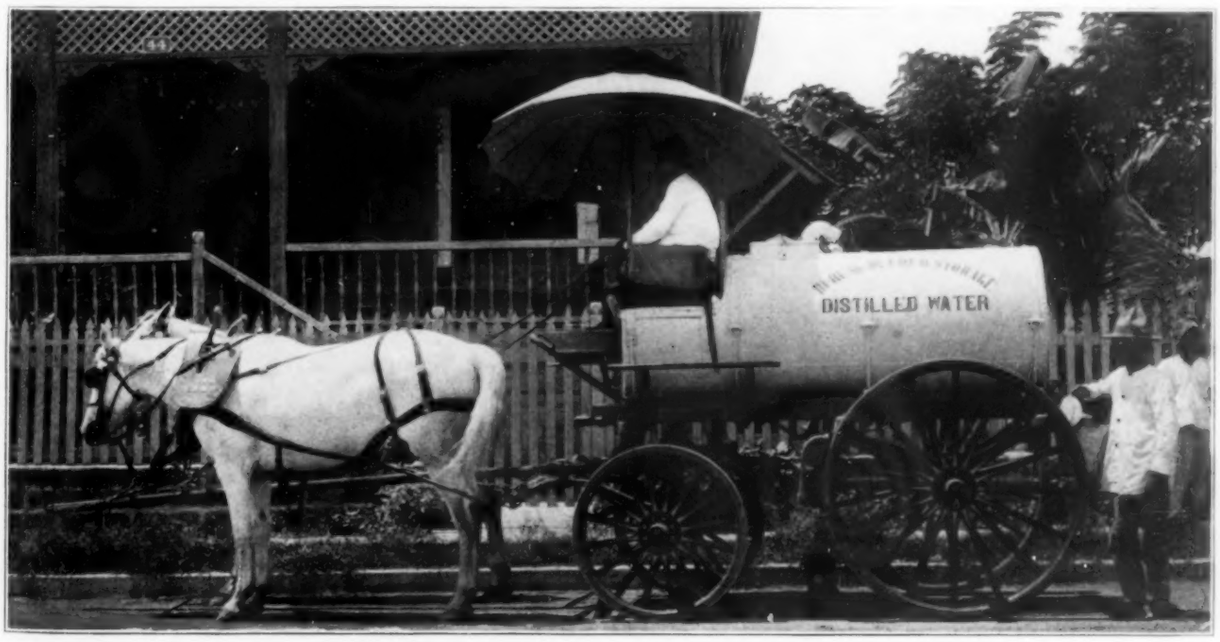
Orchestra of lepers at the hospital in Manila.

Effect of draining low portions of Manila.

of the exceptions, however, for there the disease has been extirpated completely. Since the islands are within a few days' journey of countries in which plague prevails year in and year out, this accomplishment is further concrete proof of what can be done through scientific sanitation.

Prevention of Smallpox

Prior to American occupation, at least 40,000 lives were lost annually from smallpox in the Philippines. Through the protection of vaccination the yearly deaths from this disease were reduced to a few hundred. Cities like Manila and many populous areas remained free for more than seven years. Unfortunately, in late years effective vaccination has been neglected and smallpox has claimed about 50,000 victims; but, on the recent renewal of thorough, systematic vaccination, the disease has been almost eliminated. That failure to vaccinate effectively was the cause for the reappearance of smallpox in areas many years free from the disease was conclusively demonstrated by the fact that more than 90 per cent. of the cases and deaths occurred in children and in adults who had not been vaccinated successfully. The Philippine Islands have furnished overwhelming evidence of the value of vaccination in terms of the salvation of lives and prevention of lifelong disfigurement. That vaccination is a harmless procedure is proved by the 10,000,000 who underwent the operation without the loss of life or limb or any other demonstrable ill effect. In the face of such undoubted evidence, it is incomprehensible that well-meaning persons can advocate the abolition of vaccination.



Delivering safe drinking water in Manila.

Compliance with the unfortunate advice of such persons has been responsible for thousands on thousands of deaths, and has continued a disease from which civilized countries might long ago have been free.

Various Safeguards to Health

Probably one of the greatest single factors in the high death rate in the Philippines was the poor quality of the drinking water. This was largely remedied by artesian wells. At some places, it was practicable to impound the water, treat it with that great modern boon, calcium hypochlorite, and deliver it by means of pipes. General hospitals and hospitals for the care of persons suffering with dangerous communicable diseases were built, milk was pasteurized, thorough health education was introduced into the schools, food inspection was undertaken, and by these and many other measures a degree of control over disease was established by the sanitarians that many communities in the United States have not achieved.

It is rather an interesting commentary that the health work of the United States for its dependencies has been more thorough and advanced than that at home.

Influence of Dependencies on the United States

Much stimulus for better sanitation in the States has come from Panama and the Philippines, since the control of disease there has been thoroughly convincing. The fruits of control of malaria, long since enjoyed abroad, have only lately come to the people of our own southern states. National provision for lepers is fairly recent. There is not even now sufficient demand for extensive research into the possibility of control of the respiratory diseases which annually invade practically every home in the nation. The achievements of the American sanitarian abroad have been responsible for saving much suffering and hundreds of thousands of lives, and the United States has abundant reason to be proud of its record.

But we should avail ourselves to a greater degree of the knowledge of modern sanitation, thus benefiting ourselves, and perhaps by our example influencing other countries in the same direction.

New type of cement market building which has done much to safeguard food supplies in Manila.

TYPHOID FEVER FROM POLLUTION OF WATER SUPPLY—CITY COMPELLED TO PAY DAMAGES

In June and July of 1920 there were between 125 and 150 cases of typhoid fever in Pittsburg, California. Investigations made then established the fact that, a short time before the appearance of the epidemic, the apparatus for treating the city water supply, drawn from the Sacramento River, had been out of commission for at least one day. The city was accused of neglect in failure to supply potable water for its residents, and nineteen persons who suffered from typhoid fever during the outbreak pooled their interests and brought suit against the city for damages incurred through illness or death. The case was heard by Judge J. A. Plummer, of Stockton, judge of the Superior Court, who awarded the nineteen plaintiffs damages in the amount of $32,821.29. The largest amount awarded to any one plaintiff was $12,500.

Summer Diarrhea of Infants

VICTOR C. VAUGHAN

CERTAIN types of diarrhea of infancy have the following common characteristics: (1) They occur only during the first and second years of life; (2) they are practically confined to children who are artificially fed, not 5 per cent. being among the breast fed; (3) their prevalence and fatality rise with the increase in heat of summer and decrease with the lowering temperature of autumn; (4) they constitute the largest factor in infantile sickness and death; (5) and their death rate has been greatly decreased in recent years by attention to diet.

These types of diarrhea may be acute, subacute, or chronic. They are usually ushered in by vomiting and purging. These symptoms are increased whenever food or drink is taken into the stomach. In the most acute cases the flesh melts away rapidly, the eyes are sunken, the angles of the mouth are drawn, and the countenance becomes expressive of the utmost anxiety. These symptoms may occur in a baby who up to the very hour of onset had been the picture of health. In subacute and chronic cases the approach of the disease is less rapid and the symptoms are less violent. The first stools are large and more or less loose and occur once or twice in an hour. Later they become greenish, yellowish, or brownish, and finally they look like rice water. The odor is variable. In some stools odor is not perceptible, while in others it becomes highly offensive. The temperature in these cases covers a wide range, and in the acute cases it may reach 107 F. before death. About 75 per cent. of the acute cases terminate in death.

During the summer months cholera infantum is the cause of death of more babies than any other disease. Dr. Vaughan's data are undoubted proof that in about six cases of seven the death can be traced to the mother's inability or voluntary failure to nurse her child.

Influence of Season

In the earliest mortality statistics of London (the oldest and most continuous in the world, begun in the early part of the seventeenth century), these diseases were reported under the designation, "griping in the guts." Later this somewhat uncouth and brutal designation was changed to "convulsions," since in most instances convulsions precede death. As early as 1689 it was recognized that these types of diarrhea of infancy occur almost exclusively during the hot months, and the hotter the summer the greater the prevalence and the death rate. In that year Harris wrote a book on the acute diseases of infancy from which is taken the following quotation:

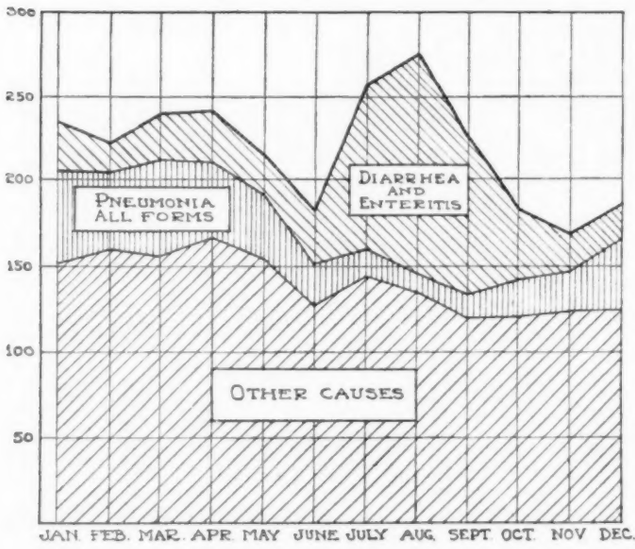
> From the middle of July to the middle of September these epidemic gripes of infants are so common (being the annual heat of the season doth entirely exhaust their strength) that more infants affected with these, do die in one month than in other three that are gentle.

Later, statistics in other cities in Europe and America were collected and it was found that all agreed in showing the highest death rate in the hottest season of the year. For instance, in 1816 of 1,245 deaths from these diseases in New York, 1,215 were in August and only thirty in all the other months of the year. Thus the relation between seasons and cholera infantum was demonstrated.

Influence of Feeding

The next step in the progress of the study of the causation of cholera infantum established the fact that this disease is confined almost wholly to infants artificially fed. In fact, cases among infants fed exclusively from the breast of the mother are so rare that it may be said generally that they do not occur. This has been so evident that for the last hundred years intelligent physicians have advised mothers that failure to feed their children at the breast multiplies many times the danger and the probability of the children's dying before two years of age. These same physicians advise mothers against weaning children between the months of May and October. Since cholera infantum is almost exclusively confined to artificially fed children, and since the bulk of the food in artificial feeding consists of cow's milk, there must be some relation between cow's milk and the prevalence of the disease. Man went along until the early part of the nineteenth century without becoming aware of the possibility that cow's milk may become poisonous, especially to infants. The number of mothers who nurse their children varies in different countries and in different communities. There can be no doubt that in this country among all classes and conditions breast feeding has become much more general in recent years. This is due largely to the persistence of phy-

sicians in emphasizing the fact that a child's life is greatly in danger when artificial feeding is resorted to. As an illustration of what can be accomplished by public education in the advantages of breast feeding, Bleyer of St. Louis has averaged the weights of babies brought to infant welfare stations and has observed that these weights were much closer



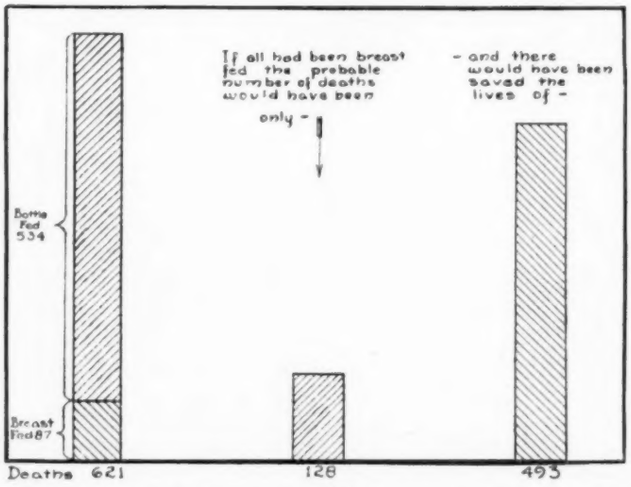
The numbers to the left represent the average number of deaths by the month of infants less than a year old, of Detroit, for the years 1916, 1917, and 1921. They show the peak reached during the summer months by deaths due to diarrhea and inflammation of the intestine (enteritis). In the computation the years 1918, 1919, and 1920 were omitted because of the excessive number of deaths due to influenza.

(From Vaughan, V. C.: Epidemiology and Public Health. Courtesy of Mosby.)

to the normal in 1920 than in 1910, and that breast feeding was much more common in 1920 than ten years before. Thus, of babies under three months of age 92 per cent. were breast fed in 1920, whereas in 1910 but 39 per cent. were so fed. Without doubt, the increase in breast feeding has been the direct cause of the superior nourishment. There is no reputable specialist in children's diseases in this country who has not both in his scientific and in his more popular writings on infant welfare stressed this point; indeed, the importance of maternal nursing has become so deeply impressed on the public in general that the laws of more than one state require every mother to nurse her child for at least three months. This is a wise legal provision; certain exceptions are made, but in every case in which the law is not complied with an explanation is required. Recognizing the fact that the mother should nurse her child makes it the more imperative that the mother, both before and after confinement, should be so favored that she is in the best possible condition to supply her child with proper food. This has led to additional legal enactments forbidding the employment of women in heavy work during the later months of pregnancy and during the first few weeks after confinement. During these periods the mother must be relieved of every unnecessary stress and strain, not only for her own sake but also for the good of her child. Other things being equal, the child should be weaned at about the ninth month, but the nursing time should be prolonged in case this date falls near the approach of or during the hot weather. The mother who finds it necessary to wean her child during the hot weather or at its approach should always consult her physician.

Cow's Milk Only a Substitute for Mother's Milk

When artificial feeding must be adopted, the milk of the cow is practically the only available source of food supply for the infant. Cow's milk cannot be made into woman's milk by any physical, chemical, or biologic process. At best, it must be regarded as a substitute, resorted to in case of necessity only. While cow's milk cannot be converted into woman's milk, and while its use in infant feeding should always be regarded as undesirable, much can be done in the way of lessening the danger to the child. In every case in which cow's milk must be substituted for the mother's milk in the feeding of an infant under two years of age, a physician should be consulted. In every progressive city in the


If all had been breast fed the probable number of deaths would have been
only -
- and there would have been saved the lives of -
Bottle Fed 534
Breast Fed 87
Deaths 621
128
493

One reason for breast feeding. The numbers represent deaths from diarrhea and inflammation of the intestine of infants, of Boston, from two weeks to one year of age.

(Courtesy of the American Journal of Public Health.)

United States legal regulations provide the conditions under which the milk supply is obtained and handled. However, it should be understood that even today there is no absolutely safe milk supply for infant feeding. No one is more competent to speak on this sub-

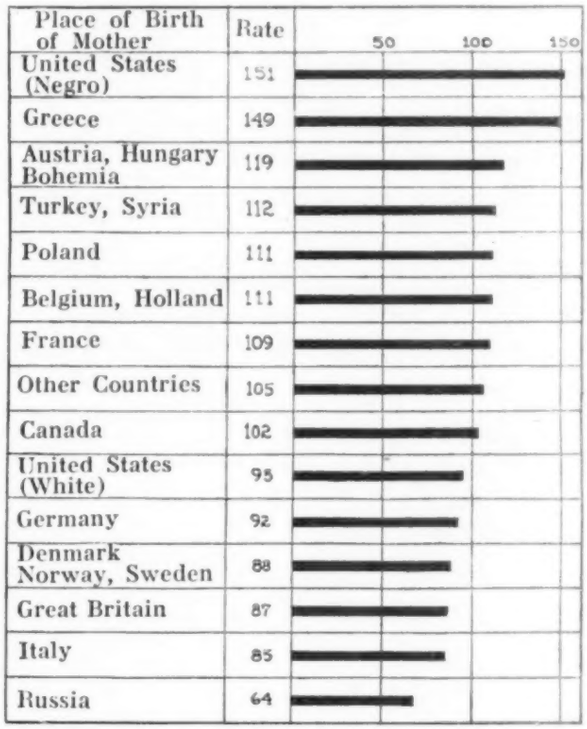
ject than Dr. Park who has done much to improve the milk supply of New York City. In 1920 he wrote:

It is now a well known fact that the general milk supply of every large city in the world is unfit for use in infant feeding. Two well defined methods have been applied in New York to effect a change in this respect, (1) the production of a special grade of milk, "certified" and allied grades, for infants, and (2) the general movement to improve the whole supply. Each of these methods has been successful to only a very limited extent. After twenty years less than 1 per cent. of the city's milk is of the certified type or equivalent to it and the expense of this grade of milk is almost prohibitive for general use in infant feeding. In fact it is a luxury within the reach of comparatively few. What is needed is a safe milk which can be furnished at a price within the means of the masses.

Bacteria in Cow's Milk

Many most competent bacteriologists have sought for a specific bacterium in cow's milk to which cholera infantum could be attributed. The result has been negative and the conclusion reached, for the present at least, is that poison may be generated in cow's milk by any one or more of certain widely distributed bacteria. These bacteria are present in all market milk, and the higher the temperature and the longer the milk is kept after milking the more do these bacteria multiply and the greater is the amount of poison produced. After it was shown that cholera infantum is due to the growth of bacteria in cow's milk, it was the custom for some years to feed infants on sterilized milk. This did not prove successful, however, since the child thus fed developed scurvy. We now know that the heat necessary to sterilize milk destroys its vitamin content. Pasteurization reduces the number of bacteria in milk and retards the growth of those not destroyed, but it is well for everyone to understand that pasteurized milk is not free from bacteria, and that it must be kept at a low temperature after pasteurization before it can safely be fed to infants. Vaughan's Epidemiology and Public Health gives the following procedures which, with more or less modification to suit local conditions, are followed at present in all dairies supplying milk to cities:

1. Milk cows are not to be exposed to undue weather conditions and are not to be subjected to abuse of any kind.
2. The bodies of the cows are cleaned daily, the hair about the udders is kept closely cropped, and the teats are wiped with a clean, damp cloth and dried before milking.
3. Decomposing food and refuse from manufacturing establishments are not to be fed to the cows and salt should always be within their reach.
4. The cows should have constant access to pure water.
5. The stables must be clean, well ventilated and should provide for at least 500 cubic feet of air per animal.
6. The floors, walls, and ceilings of the stables should be tight, kept free from cobwebs and whitewashed at least twice a year.
7. Manure is removed daily from the stables. Lime is sprinkled daily on the floor and in the gutter.
8. When milk is drawn from a cow it is immediately carried to the milk-house, strained through absorbent cotton, cooled, and kept at a temperature not above 50 F. The milk-house is screened and kept free from flies.
9. Milk pails are thoroughly washed or steamed before each milking.
10. The milker wears clean, white outer garments and washes and dries his hands before milking.
11. Cows are quietly and thoroughly milked at the same hour morning and evening and in the same order.
12. If any part of the milk is of unnatural appearance or if by accident dirt gets into the milk pail, the contents of that pail is rejected.



Deaths from all causes among infants of Detroit, during 1920, listed according to place of birth of mother.

(From Vaughan, V. C.: Epidemiology and Public Health. Courtesy of Mosby.)

13. Careful observation of the personnel of the dairy is made day by day and no person exposed to a contagious disease is permitted to milk.
14. Milk is shipped in refrigerator cans.

Age of the Child

The fact that cholera infantum is very rare after two years of age is well illustrated by Cronin's tabulation of 1,000 successive deaths from cholera infantum in the city of New York; Cronin found that 817 of these occurred in children under nine months, 13 per cent. in children from nine to twelve months, and only 6 per cent. in children during the second year. The immunity to cholera infantum acquired during the second year is due

undoubtedly to several factors. The child then has a mixed diet and depends less on milk. It is not so susceptible to the depressing effects of heat. It absorbs less readily the milk poisons formed in its intestine. A child more than two years of age may drink with impunity milk which would surely kill one less than nine months of age.

Relative Influence of Urban and Rural Surroundings

For centuries it has been observed that cholera infantum is rare in rural communities. This is easily understood. The artificially fed child on the dairy farm, even if the milk is not up to standard, gets it before bacteria have had time to multiply in it to any extent. The heat exhausts the child less in the country than it does in the city. Other things being equal, rural life, especially during the hot months of summer, is more conducive to the health of the infant than urban life.

Those who can afford to do so should follow the advice given by Dr. Benjamin Rush more than a hundred years ago, and take their children during the hot months of summer to the country, but if a child is being fed artificially, attention must be given to the possibility of securing suitable food for it in the temporary home. It is well known that in many villages and country places little attention is given to the securing of clean milk; in fact, the milk supply of any of our great cities today is likely to be better than that of some villages. Dairymen who produce a milk which cannot be sold in the city have no trouble in disposing of it in the village. In many country places there is no dairy inspection, no supervision of the milk sold, and the idea that milk can possibly kill a child has never been entertained by any inhabitant. To escape the heat of the city and to go to a place where filthy milk only can be secured is doubtful wisdom. The intelligent mother, however, knows enough to filter the milk through clean cotton, to pasteurize it, to bottle it, to supply herself with proper nipples, to keep the milk after pasteurization in the refrigerator, never to use one bottle for two feedings, and to make such modifications in the milk as her physician has instructed.

Influence of Race

While infant mortality is higher in the poorer districts of cities usually occupied by recent immigrants, there are distinct race stock differences. Rates are not high among all foreign groups. This is well illustrated by the diagram by Palmer and Blakeslee, obtained after a study of the Detroit records for 1919. The rate for the entire city in that year was 97. The rate for the children of native-born white mothers was 95, slightly below the average, but there are five race stocks with still lower rates—German, Scandinavian, British, Italian, and Russian (mostly Jewish). Children of Russian Jewish mothers had the lowest mortality rate of all the race groups, namely 64. The highest rate is that of the negro, 151. Those who are interested in this part of the problem will find much food for thought in the accompanying diagram, which tells its own story.

Place of Birth of Mother	General Diseases (Acute Infectious and Venereal, and Tuberculosis)	Respiratory Diseases (Pneumonia and Bronchitis)	Digestive Diseases	Diseases of Early Infancy Including Malformation
United States (White)	11.2	13.9	21.4	42.1
United States (Negro)	22.2	44.3	25.6	49.3
Russia	10.5	11.8	21.0	19.8
Italy	13.0	30.3	19.9	19.0
Austria Hungary Bohemia	12.5	29.4	32.8	40.1
Poland	11.9	20.0	33.4	40.0

Causes of death among infants of Detroit, during 1920, listed according to place of birth of mother.
(From Vaughan, V. C.: Epidemiology and Public Health. Courtesy of Mosby.)

Mother's Milk—Nature's Birthday Gift to the Baby

JULIUS H. HESS

MOTHERS of today do not wilfully deprive their babies of their natural food. Every mother should know that the reward for her patience and perseverance in furnishing breast milk for her baby increases its chances of living through the first year. It does more than this; it fivefold reduces the illnesses of the first year.

Mother's milk, when available, is the only food entitled to consideration. All other methods of feeding the newborn infant must be looked on as makeshifts. Fortunate are the babies fed on breast milk during the summer months, for few of them develop severe diarrhea. Of every hundred babies who die of intestinal infection (so-called summer complaint) eighty-five are bottle fed, and only fifteen breast fed.

JULIUS H. HESS, M.D., is professor of pediatrics in the University of Illinois College of Medicine, Chicago. Dr. Hess names the reasons why every baby should be breast fed, when possible, during the first months at least, and gives in some detail directions to the mother for nursing and weaning the baby. These directions are not to substitute, but to supplement, the family physician's counsel.

The Mother of Today

The young woman of the present prides herself on her physical development. Ordinarily, she is of the athletic type and far superior physically, on the whole, to the women of the previous generation. Good health and physique are the prime attributes to normal lactation. In considering the future of her child, every mother should reflect that the imperfections and ill health of adults are to a considerable extent results of the mistakes in their care during infancy. One of the most gratifying signs of health of the present day is the increasing ability of the mothers, particularly among the well-to-do, to nurse their children. The young mother of today is better able to nurse her offspring than were her mother and grandmother because she is more vigorous and is outdoors more.

Advantages to the Mother of Nursing Her Infant

The cycle of motherhood cannot be considered complete unless the mother can feed her infant at the breast. Nursing her infant has a beneficial effect on her physical development and creates a high degree of mental composure. The act of nursing by the infant causes an increased flow of blood to the breast and a decreased supply to the abdominal and pelvic organs. This physiologic process decreases the size of the pelvic and abdominal organs and the tendency toward permanent enlargement of the abdomen and resulting misplacement of the pelvic organs. The acknowledgment of the duties of motherhood in nursing a child has a moral influence on all those with whom the mother may come in contact. Besides, every nursing mother will confirm the statement that the periods during which her baby is at the breast give her pleasure and satisfaction.

Benefits to the Infant

It has been stated that the death rate and the incidence of sickness among breast fed babies is far less than among babies artificially fed. The baby's food is always fresh and can always be clean. It is also always available. It is the most economical of all foods. It is the best prophylactic against the development of rickets, anemia, scurvy, and intestinal troubles. It reduces the dangers of infections and as a curative measure, in the presence of all diseases, whether nutritional or infectious, it has no peer. The slight ailments and first signs of illness in her baby are almost immediately recognized by the mother because of its frequent and intimate contact with her. With the possible exceptions of influenza and tuberculosis, the infant fed at the breast is less susceptible to infection and the after-effects of disease are less severe. It may be stated with absolute conviction that as breast feeding is increased in a community, the infant mortality rate is lowered. This is most strikingly true when the environment is highly insanitary.

Difficult Nursing

It cannot be denied that occasionally a mother, because of her mental and physical condition, is unable to nurse her baby, but fortunately such cases are few. In some women the breasts do not have enough glandular tissue, even during the first months of lactation. This is, however, no indication for weaning. The breast milk should be complemented by a properly balanced mixture

of cow's milk. A mother's inability to nurse her baby is commonly due to lack of knowledge and encouragement. The University of Minnesota Breast Feeding Bureau, by most careful supervision of the infants born in Minneapolis and adjoining territory, was able to encourage 72 per cent. of the mothers under observation to continue to nurse their infants, at least in part, for nine months, and 95 per cent. for at least three months or longer.

Stimulation of the Breasts

The baby's nursing is by far the most important factor in maintaining the supply of milk. A vigorous baby's repeated and regular nursing until the breasts are emptied completely is, of course, the natural and best method. When this natural stimulus is lacking, or when, for any reason, the demand on the breast is decreased, the supply of breast milk decreases

For the sake of convenience all the articles necessary to keeping the breasts clean may be kept on a tray; the large bottle contains saturated solution of boric acid, the small bottle, liquid petrolatum; the jars contain gauze, cotton, and applicators. A glass or graduated beaker is added.

gradually until there is not enough to meet the baby's needs. By judicious stimulation, by placing the infant at the breast and expressing milk by hand I have observed the supply of breast milk return to normal, even after the baby had not nursed for two weeks or more.

Expression by hand is the best method for stimulating the breasts to increased secretion when the infant is too weak to nurse or refuses to nurse properly. The milk has to be expressed too for infants with cleft palate and harelip, and when the nipples are so deformed that they cannot be grasped by the infant. Two illustrations will give an idea of how difficulties in breast nursing may be overcome. One infant with a bad cleft palate and harelip, which made it unable to grasp the nipples, was fed with expressed milk from the time of its birth, and at nine months, the end of the period of lactation, was of normal weight for its age. Another infant, whose mother's breasts were without nipples, was fed with the mother's milk, which was obtained by hand expression for six months.

Examination of Human Milk

No baby should be weaned because a single laboratory examination shows a deficiency in the fat, protein, carbohydrate, or salt content of the milk. The baby gives the best evidence of the quality and quantity of its food. All conclusions should be based on the baby's temperament, its weight, its stools, and body temperature. All conditions which might have a detrimental influence on the baby's progress must be considered as possibly responsible for the baby's lack of progress before its mother's milk is blamed.

Daily Routine of the Mother

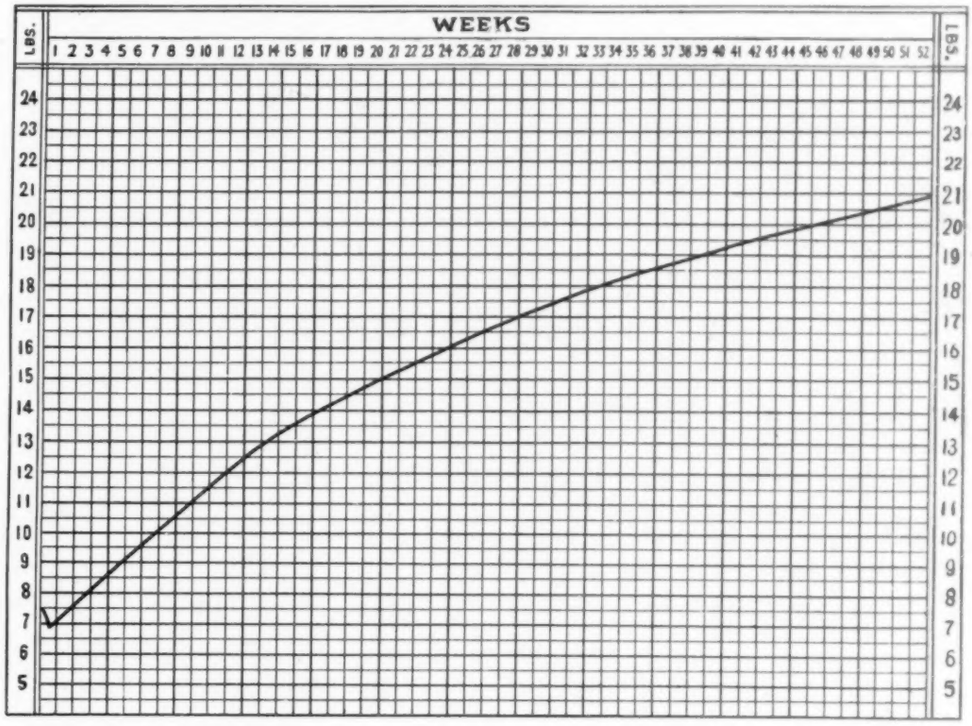
Diet.—The first essential of feeding a nursing mother is an abundance of simple, nourishing food, to the mother's liking. During the first days following labor and while the mother is still in bed, she should be on a more or less light diet, but one that is varied so that her appetite may be stimulated; she may thereby be encouraged to take enough food to meet the needs of the infant and herself. Four meals in twenty-four hours is usually all that she can take with comfort while in bed.

When the mother is up and about and has resumed her ordinary duties she may be allowed to eat such foods as she was accustomed to before pregnancy. It is a fallacy to forbid vegetables and fruits on general principles. As a rule, food that the patient can digest without inconvenience is a safe food so far as the nursing is concerned. Occasionally a nursing infant develops colic after its mother has eaten certain of the aromatic vegetables, such as turnips, cauliflower, and onions. Such foods and such additions as salads and coffee to the mother's diet may interfere with her digestion and thereby change the quantity and not infrequently the quality of her milk, all of which may react on the child. Exceptionally, an infant becomes sensitized to one of the animal or vegetable proteins. Restrictions in the mother's diet are especially indicated when she is feeding a premature or sick infant, because such infants are more readily affected by changes in the quality of breast milk. The common error in the mother's diet lies in underfeeding and overfeeding. A greatly restricted diet in a robust young mother who has always eaten to her own satisfaction of a generous variety of foods is one of the surest means of reducing the

quantity and the quality of her milk. On the other hand, overfeeding leads to revulsion for food and sooner or later indigestion results. When the mother is convinced that any article of food disagrees with her, even though there is doubt about it, the food should be discontinued. In general, milk, eggs, meat, fish, poultry, cereals, fresh vegetables, and fruits should constitute the basis for selection. The acid fruits, salads, and aromatic vegetables may be tried, to be discarded if they seem to distress the infant. Eggnogs, cereal gruels with milk, cocoa with milk, malted milk, and similar drinks may be given with meals, or if the mother wishes, she may take them between meals. The day's diet should include one quart of milk in some form and at least one quart of water. Tea and coffee in moderate amounts may be permitted.

Number of Meals.—Most mothers are satisfied to eat only four times daily. The fourth meal, at bedtime, should consist of a dish of cereal and milk, or some other simple and easily digested food.

Air and Exercise.—From two to four hours daily should be spent in the open air, weather permitting. While outdoors, the mother should take moderate exercise, but never to the point of fatigue. It is well to divide the time of recreation into a morning and an afternoon period.



The curve follows the average gain in weight of normal infants during the first year.

Sleep.—At least eight hours of every twenty-four should be given to sleep. If a mother's sleep is disturbed at night, she should have the benefit of an hour or two for rest at midday. Feedings during the night should be reduced as soon as possible to one only between six in the evening and six in the morning. This is done most easily when the infant sleeps in a room separated from the mother and is under some one else's care during the night. Under all circumstances, the infant must sleep in its own crib.

The Avoidance of Constipation.—One bowel movement daily must be insisted on. As the excessive use of cathartics may result in diarrhea in the baby, efforts should be made to regulate the bowel function through food and exercise. A glass of cold water on arising in the morning and a diet including coarse cereals, vegetables, and fruits is usually all that is necessary. If this regimen does not have the desired effect, abdominal massage and local measures, such as an oil enema or a suppository, should be tried. When these measures do not prove effective, it may be necessary to take mild laxatives, such as liquid petrolatum, milk of magnesia, or cascara sagrada. If no evacuation of the bowel has taken place during the previous twenty-four hours an enema should be taken at bed time.

Care of the Breasts.—During the later months of pregnancy a small amount of clear fluid is secreted by the breasts. Toward the end of pregnancy and for the first few days after labor, the secretion is called colostrum. By the third or fourth day the secretion resembles the later milk in physical and chemical properties.

In the average breast, nursing by a feeble infant results in a minimal milk supply, while nursing by a strong infant or regular expression will be followed by a supply varying directly with the demand made on the breasts.

If the nipples are small, they should be gently drawn out night and morning during the last months of pregnancy, so that they will be lengthened.

The breasts should be cared for regularly during the period of lactation. A tray can hold all the articles needed: a glass-stoppered bottle with a saturated solution of boric acid,

a jar of cotton-wrapped tooth picks to be used in applying the boric acid, and a graduated glass or beaker.

The nipples should be washed thoroughly before and after nursing with a saturated solution of boric acid poured fresh from the bottle for each cleansing, and the surplus should be thrown away. The boric acid should be applied with the cotton pledgets. If the child is to nurse directly at the breast the fingers should not come in contact with the nipples. If the nipples are tender they should be anointed with a sterile mixture of 5 per cent. tincture of benzoin in liquid vaseline.

In some cases when the milk first appears, the breasts may become engorged and painful. Usually this rights itself without difficulty as soon as the relation between the supply and demand is established. During this period of readjustment the amount of fluids taken should be limited. The discomfort from the engorgement may be relieved by elevating the breasts and keeping them partially under pressure by the use of a supporting breast binder. If a binder is used in time and the mother takes little fluid in her diet for a few days, it is rarely necessary to empty the breast by hand or with a breast pump.

Changes in Quantity and Quality of Breast Milk

In many women the return of the menstrual period, especially the first period, is associated with changes in the breast milk. In some women they occur with each menstruation. The changes may be quantitative and qualitative. If simply the amount of milk is reduced, often the infant will show signs of hunger. But in some mothers the quality of the milk is so changed as to cause colic and indigestion, the latter associated with frequent stools in the child.

Menstruation is never an indication for weaning, and only rarely should any of the feedings be discontinued at these times, even though they cause minor disturbances in the infant. Disturbances occur most often either before or during the first menstrual period.

The mental condition of the mother may have a direct influence on the secretion of milk. These changes are, however, only temporary. When the infant is distressed, at these times, it may be wise to remove it from the breast for one or two days, until the mother has recovered from her grief, shock, fright, or anxiety. In the meantime the milk should be expressed by hand.

Rules for Nursing

Feeding During the First Days.—During the first day of life food may be withheld for twelve hours. The infant is kept in a warm crib. Usually it soon falls asleep, and should be awakened only for change of diapers. As a rule it does not cry from hunger until after the first half day of life, and even then in many cases it is difficult to get it to nurse. During the second twelve hours, the infant may be put to the breast two or three times in order to stimulate secretion and to teach it to nurse. During the second twenty-four hours the infant should be put to the breast at regular four-hour intervals. The sixth feeding may be omitted. By the third or fourth day the infant will usually receive most of its required food from the breast. If a night feeding is to be instituted it is well to waken the infant at the desired hour in order to cultivate regular habits, which are essential to the mother's welfare. The infant should at all times be taught to take food by the clock. This means it should neither be nursed before the accustomed hour nor should its feedings be delayed beyond its regular time unless an emergency arises. When the infant cannot take or does not receive enough milk on the four-hour nursing period, with five or six nursings in the day, it should be put on a three-hour period, with seven feedings in twenty-four hours. The average infant can be trained by the second month to wait regularly for its food, and if the milk is of proper quality and of sufficient quantity, it will sleep quietly for most of the intervals between nursings.

Regularity.—The breast which is emptied at definite intervals invariably functions better than one which is not, not only as regards the quantity but also the quality of the milk. Regular habits in breast feeding are as essential to the production of milk as to its digestion and assimilation. If necessary, the baby should be wakened to be fed.

The average mother can supply the needs of a single meal with the milk from one breast, and the breasts should be alternated in successive feedings. The breast should be thoroughly emptied under all circumstances, as this is the best method of increasing the supply of milk, and the baby is the means by which this can be accomplished. Allowing a lazy baby only partially to empty both breasts soon leads to diminished secretion of milk. Sometimes, however, it is advisable to give both breasts at each feeding. The first breast should then be emptied thoroughly before the baby is given the second, and the next nursing should be started on the breast given second in the last feeding.

Number of Feedings in Twenty-Four Hours.—At first, six feedings at four-hour intervals are given in twenty-four hours, and five feedings by the second to the fifth month, according to the individual needs of the child. Night nursing can often be discontinued by this time and babies properly fed will go from ten at

night until six in the morning without anything, or perhaps only a drink of water.

A three-hour nursing period is especially indicated when the mother's breasts are small and poorly developed, since the more frequent stimulation will result in a larger twenty-four hour quantity. Likewise, a small and weak infant who finds it difficult to remain at the breast through a long nursing period may be nursed every three hours.

Length of Nursing.—As a rule, a robust baby takes three fourths of the milk from a well filled breast in the first five minutes of a twenty-minute nursing. Fifteen to twenty minutes should be the limit for the nursing period.

The quantity received at individual nursings varies greatly throughout the day. The early morning nursings often yield twice the amount of the later nursings. It is necessary, therefore, to ascertain the twenty-four hour quantity in order to estimate the total value of milk received.

When the milk from one breast does not meet the infant's demands, both breasts should be given at each feeding, the normal nursing time of fifteen or twenty minutes being divided between the two breasts, either equally or by alternating a long and short feeding period of fifteen and five minutes, so that at alternate feedings each breast will supply the long nursing period. Weak and lazy babies may require wakening during the nursing period to keep them at work. Very weak babies may require a longer period with short intervals in which to rest.

For the proper nursing of the baby, the mother sits in a low chair with her right foot on a low stool, so that the baby may rest on her raised knee.

Need of Water.—When the infant is receiving one sixth of its body weight in milk during the day, little, if any, additional water is required. When the breast milk cannot supply this amount, additional water or other food must be given to meet the required one sixth of the body weight in fluids. During the first days of life, when the supply of breast milk is insufficient, the need is met by from one to three ounces of a 2 to 5 per cent. solution of cane or milk sugar, which has been boiled, given at twenty-four hour intervals until the milk appears. Before the water is given, the infant should be placed at the breast at each feeding. Even when milk is plentiful, taking water two or three times daily from a nursing bottle accustoms the infant to taking food in this way. An infant so trained will meet emergencies of weaning more readily than one unaccustomed to bottle feeding.

Signs of Successful Nursing.—The normal full-term baby gains not less than four ounces weekly. This is the minimum weekly gain which is safe. When a nursing baby does not gain or gains only two or three ounces a week, it means that something is wrong and the trouble will usually, but not invariably, be found in the milk. When the baby is nursed at proper intervals and the supply of milk is ample and of good quality it is satisfied at the completion of the nursing. Under three months of age it falls asleep after ten or twenty minutes at the breast. When the nursing period again approaches, it becomes restless and unhappy, crying lustily if the nursing is delayed. When the breast is offered it takes it greedily. The weekly gain in weight under such conditions is usually from four to eight ounces. At the fifth month the baby will have doubled, and at the twelfth month trebled its weight at birth. The average gain a week during the first year is about four ounces.

Signs of Unsuccessful Nursing.—The most significant symptoms of a baby's unsuccessful nursing are no gain, insufficient gain, or loss in weight, fretfulness while nursing, a tendency to remain for too long a time at the breast, and crying when it is removed from

the breast. Small stools composed largely of mucus are usually an indication of insufficient food, especially when only one or two are passed daily. While every effort should be made to maintain the supply of breast milk, it is of equal importance to interpret the symptoms of underfeeding as indications for complemental or substitute feedings.

Except in an extreme emergency, breast feedings should not be discontinued suddenly.

Mixed Feeding and Weaning

Months of Nursing.—Some mothers can carry on the nursing for only two or three months, others for as long as nine months. It is exceptional to find a mother with a supply of breast milk sufficient for the infant after the ninth month. It is usually wise to allow one bottle feeding daily by the end of the third or fourth month in order to relieve the mother and train the baby in bottle feeding.

Mixed Feeding.—The first indication for mixed feeding is furnishing enough food to meet the baby's needs when the mother's supply becomes inadequate. This is best accomplished by complemental feeding; the baby is given a mixture of cow's milk after a limited period on the breasts. The second indication is relieving the mother of one or more breast feedings to provide for her recreation, and the third, teaching the baby bottle feeding in preparation for emergencies. The two latter conditions necessitate replacing breast by bottle meals—these are known as substitute feedings. Whichever of these two methods of mixed feeding is adopted, the all important question to be answered for the mother is what foods and how much of them shall be given to replace the breast milk. The wise mother will obtain the necessary advice from the physician.

Weaning.—Weaning should be gradual, whenever possible, for the sake of both mother and child. The first months in the life and development of a child are the most critical period. Weaning at this time is a serious matter. As a rule, if it is necessary, a well baby can be weaned successfully after six months of age, if it is properly done. However, at least part time breast feeding should be continued throughout the next three months or even longer, if possible, depending on the baby's health, the season, and other circumstances. When a mother cannot give her baby at least two satisfactory breast feedings daily, it is advisable to wean the child.

Sometimes a baby cannot take cow's milk, but this is unusual. In such a case, milk from a goat may be tried. Goat's milk has been of great value in some cases of eczema in young children.

Protracted Nursing.—Weaning may be delayed after nine months when the baby is passing through the hot months of summer, and when the quality of the cow's milk to be had is uncertain. It may also be delayed when the baby is convalescing from a recent illness, or if epidemics of acute infectious diseases are going the rounds.

As a rule, the trouble in weaning is not the baby's inability to digest cow's milk, but too sudden change, or food not adapted to it.

If the baby has to be weaned suddenly, the food must be weaker in the beginning than for an artificially fed child of the same age. If the baby is weaned at six months, it should be fed a mixture suitable for a child of two or three months and the same rule applies to older children. When the baby becomes accustomed to cow's milk, the strength may be increased gradually.

By gradual change from breast feeding to bottle feeding, usually weaning can be accomplished within two weeks without upsetting the baby. It is very seldom necessary to wean in a shorter time than this, and there is every reason to wean gradually so as to prevent any disturbance. Rarely should breast feeding be continued past the first year.

The fear of many mothers of the "second summer" is well founded when dirty milk and other improper foods are fed promiscuously, but with clean certified and sterilized milk and properly prepared soft foods, the dangers of the summer heat are lessened. It should be the rule to underfeed rather than overfeed. In hot weather and during the greatest heat, the infant's diet may well be reduced one half.

EXTRA! EXTRA!

Remember that every fly killed in the early summer is equal to 17,000 killed later on. Flies are a menace to health, comfort, and cleanliness.

Be sure that your garbage container is tightly closed. It breeds flies by the millions. They carry the poison from your garbage to your table and you unconsciously eat it.

Flies cause more deaths than all the wild beasts in the world.

Keep flies out of your home.

Haverhill Tuberculosis Association.

The Conquest of Hydrophobia

MORRIS FISHBEIN

THE child never tires of hearing again and again the same old stories. It is thrilled over and over by the legend of Jack the Giant Killer, or of Cinderella. And while the story of the conquest of rabies and, succeeding it, of a large train of infectious diseases, has not the element of newness, the tale continues to fascinate and will continue to give inspiration through the centuries. December 27, 1922, the entire civilized world celebrated the one hundredth anniversary of the birth of Louis Pasteur; it is fitting therefore to recount now the conquest which he and his co-workers successfully conducted against hydrophobia or rabies, a conquest which brought to scientific medicine immediate and enthusiastic recognition by the public. And while few new facts can be added in telling the story, we hope to emphasize some aspects of the work which have not thus far received suitable attention.

MORRIS FISHBEIN, M.D., is assistant to the editor of the Journal of the American Medical Association and associate in medical history in Rush Medical College. *His review on the prevention of hydrophobia follows the steps that led from the treatment of the disease by the liver of a mad dog or crawfish eyes, in the days of Pliny and Galen, to the dramatic triumph of Pasteur, and the establishment of institutions where the Pasteur treatment may be obtained.*

The History of Hydrophobia

Before Pasteur, darkness. And then there was light! Before Pasteur a disease so fatal that even physicians sickened at its progress; after Pasteur a disease so thoroughly controlled that the large majority of modern physicians have never seen a case. Rabies is an old disease. Aristotle, sage and philosopher, three hundred and fifty years before Christ said:

> Dogs suffer from a condition of madness which puts them in a state of fury, and all animals they bite when in this condition become also attacked by rabies.

Cornelius Celsus, in the first century A. D., keen observer and great logician, gave an admirable account of the disease. "The patient" he said, "is tortured at the same time by thirst and by an invincible repulsion toward water." To Galen it was the worst of all diseases and he described its symptoms with great accuracy. Then, too, Rhazes (922 A. D.) and Avicenna (1036 A. D.) observed cases and described the condition. Moreover, the disease was well known to the public, for one of Homer's warriors likens Hector, the Trojan warrior, to a mad dog.

Of the treatment of rabies previous to the time of Pasteur one can only say that it was bizarre, unscientific, even ridiculous. It reflected, indeed, the absolute lack of real knowledge of the origin of the disease and of its character. It was if anything a treatment built on a symbolism which not even the plausible suggestions of a Freudian could have induced an intelligent man to believe. Pliny the Elder recommended the taking of the livers of mad dogs; Galen, who opposed him, suggested the use of crawfish eyes, certainly not a step forward. And thus from the earliest times until the very threshold of the nineteenth century the disease claimed victim after victim, and the sufferers died, feared by the ignorant multitude, looked on with suspicion, deserted!

In 1780 a prize was offered in France for the best method of treating hydrophobia, and a surgeon named Le Roux won it by a pamphlet in which he recommended cauterization. In his time superstition was dominant. Hydrophobic persons, in fact persons merely suspected of having hydrophobia, were killed like beasts, sometimes shot, poisoned, strangled, or suffocated. In 1810, according to Vallery-Radot, the government was asked to enact a bill which read:

> It is forbidden, under pain of death, to strangle, suffocate, bleed to death, or in any other way murder individuals suffering from rabies, hydrophobia, or any disease causing fits, convulsions, furious and dangerous madness; all necessary precautions against them being taken by families or public authorities.

And Vallery-Radot points out further that in 1819 newspapers related the death of an unfortunate victim who was smothered between two mattresses; the editors commented:

> It is the doctor's duty to repeat that this disease cannot be transmitted from man to man, and that there is no danger in nursing hydrophobia patients.

In fact, Pasteur himself remembered an epidemic in October, 1831—he was then nine years of age—when a rabid wolf produced terror throughout Jura. Pasteur saw one man having his wounds cauterized at the blacksmith shop near his father's house. Cauterization, by the way, especially in the absence of anesthetics, is

not exactly a pleasant method of treatment, and many doctors endeavored to find some other method. Some inoculated the venom of snakes in the hope that it would antagonize the rabies virus. In 1852, the government of France again offered a reward and the list of cures included everything in the catalog, even to the crawfish eyes of Galen. A report was made to the Academy on this long list of cures and it was concluded that cauterization was the only prophylactic treatment of value in the treatment of the disease.

As to the cause of hydrophobia, many investigators had tried to demonstrate scientifically some responsible agent. It had been believed that the disease could develop spontaneously in hungry dogs. Attempts to produce hydrophobia in dogs by starving them had been made by Radi and Bourgelat, with negative results, of course; the dogs may have been angry, but not mad. It had been noticed that the disease was most likely to develop in dogs that had a large amount of liberty. The idea that angry or excited dogs could cause rabies by their bite had long been held by the laity—it is even believed today by some persons. Then, too, long experience had caused an association in the minds of many observers between the saliva of the rabid animal and infection with the disease.

In 1879, Bouley, colleague of Pasteur, had affirmed again that the germ of evil resided in the saliva. But there was no proof. In fact, Duclaux points out that the victory over rabies did not seem easy. Every man and every animal which contracted rabies died from it, so that it was impossible to know whether or not it would recur in the same person. The only means of transmitting it was by having a mad animal bite another animal, or by inoculating with saliva from a rabid animal, but this method of transmission, as will be pointed out later, was most uncertain. Finally, numerous attempts carried on, not only in the laboratories of Pasteur but elsewhere, had shown that it was impossible to discover in the saliva of rabid animals any organism having an assured causative relation to the disease. Duclaux says:

> Pasteur, after having believed that he had discovered it, had renounced this idea, which he had had the prudence not to publish, so that he attacked the question without knowing whether the disease was a virus disease, without knowing or being able to cultivate the microbe, and even without having a certain and quick method of inoculation.

We come then to the year 1880, the beginning of the series of epochal experiments. It must be remembered that Pasteur had already developed a method of study, had discovered the organisms responsible for, and the methods of protection against anthrax and chicken cholera. But although these great discoveries, absolutely established through crucial experiments, publicly performed, had to some extent overcome the general skepticism regarding his doctrines, it was the prophylaxis for rabies which above all won the public's confidence, which gave Pasteur his place in the sun, which caused a thankful people to found and permanently establish the Pasteur Institute.

In describing the work on rabies I shall follow the outline of René Vallery-Radot, son-in-law of the great master. It is well known that no man is a hero to his mother-in-law, and but rarely does one find in the familiarity of family relationships the utterly worshipful adoration displayed for Pasteur by his son-in-law, René Vallery-Radot. He writes as one inspired; his enthusiasm seems limitless; he is absolutely impassioned. His biography of the great master is as fascinating as the most thrilling of fiction. To him the great life of Pasteur is a battle field in which a magnificent mind controlled by a noble spirit is warring against all of the evil forces which threaten mankind. What then, if in the progress of his account, he fails to give complete recognition to the co-workers of Pasteur, to those who supported him when he doubted, and to those who fought brilliantly for him! The facts are available, and at the proper places will be woven into the story.

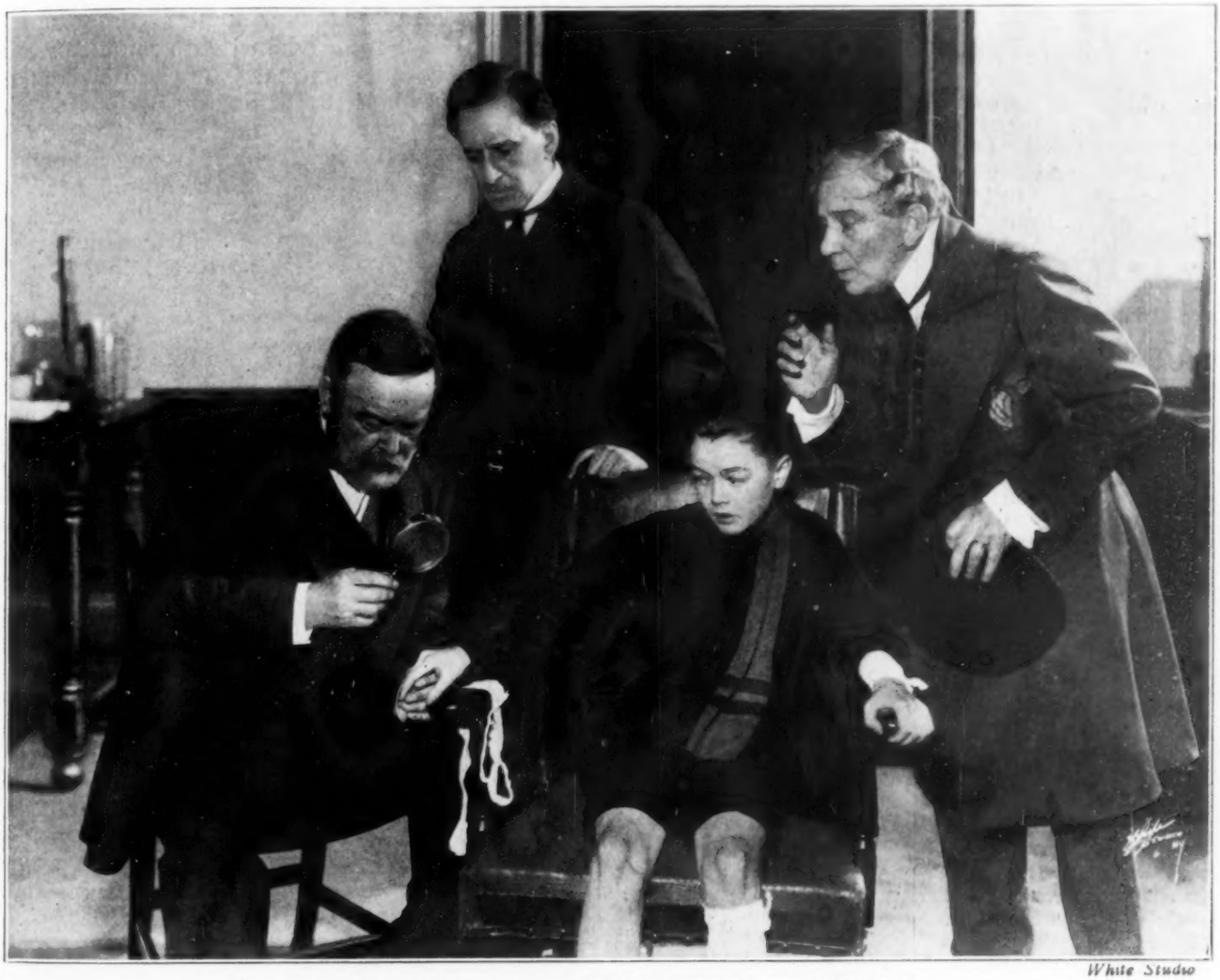
Pasteur's Work on Rabies

"When he (Pasteur) was received at the Académie Française, Renan, hoping to prove himself a prophet for once, said to him" says Vallery-Radot, "Humanity will owe to you deliverance from a horrible disease and also from a sad anomaly: I mean the distrust which we cannot help mingling with the caresses of the animal in whom we see most of nature's smiling benevolence."

In 1880, M. Bourrel, an old army veterinary surgeon, who had even suggested filing down the teeth of dogs as a preventive against hydrophobia, brought two mad dogs to Pasteur. Up to this time all that had been known of the virus of rabies was that it was contained in the salivary glands and their secretions, and that infection often followed the bites of rabid animals. It was known that after characteristic symptoms appeared the disease was uniformly fatal, but there was no positive means of diagnosis. It was therefore impossible to secure trustworthy statistics of the mortality among persons bitten by rabid animals, for there was no method of determining accurately how many of the animals that had bitten human beings were rabid. In fact, it was even asserted by some persons that there was no such disease as hydrophobia.

Rabbits were inoculated with the saliva of a child dying of hydrophobia and the rabbits died. Dr. Maurice Raynaud, who had performed a similar experiment, concluded that it was proof of the transmission of hydrophobia

by saliva. Pasteur, however, examined the blood of the rabbits which had died, found an organism, cultivated it, inoculated rabbits, and showed the existence of the organism in the blood of animals thus inoculated. But he said, "I am absolutely ignorant of the connection there may be between this new disease and hydrophobia." He had, in fact, discovered organisms frequently found in saliva but not



White Studio

HENRY MILLER IN GUITRY'S PLAY "PASTEUR"

PASTEUR. . . . *Come here, my boy . . . poor little man! Show me your hands. . . . How old is he?*
THE GRANDFATHER. *He's just nine!*
PASTEUR. *Let me see them! Let me see them.*
[*He removes the bandages which cover the hands.*]

the organism responsible for hydrophobia. The saliva of mad dogs inoculated into animals sometimes produced prompt effects, sometimes resulted in nothing. It was decided to make further experiments.

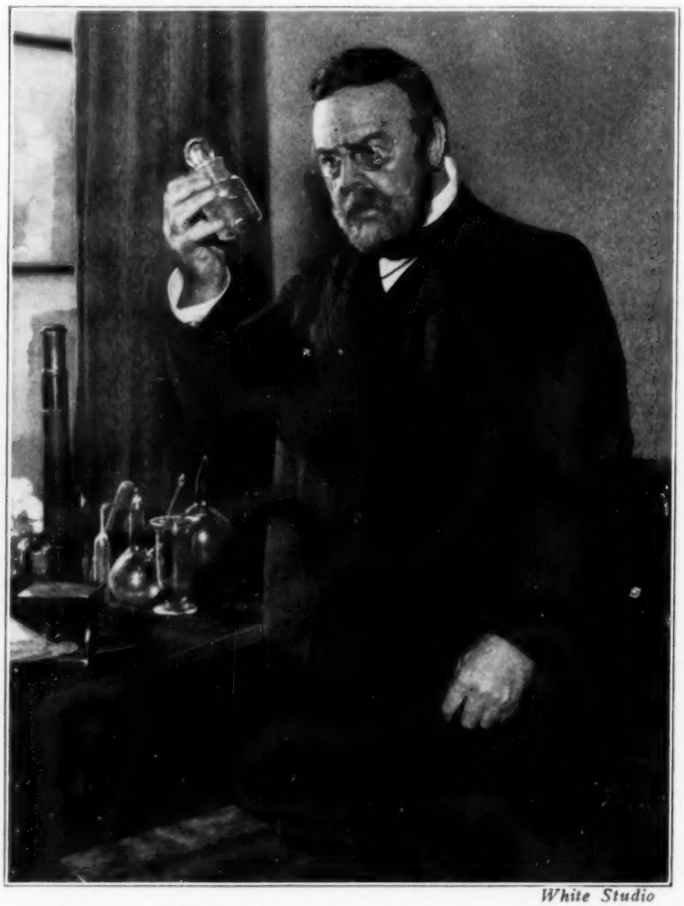
Duclaux says:

> It is here that we shall soon see the power of the experimental method when it is handled at the same time with prudence and audacity. It is a marvelous tool, having an extraordinary power of penetration, being able, provided it is handled by one who thoroughly understands it, to work even in obscurity, like those drills which attack and pulverize everything that is presented to them in the depths of a black pit, provided that they are entirely in the grasp of the man who directs them.

The clinical manifestations of rabies indicated a relationship of the disease to the nervous system. Dr. Dubouse of Pau had already observed this, and concluded that the nerve substance should be virulent, but he had not apparently supported his contention by actual experiments. M. Galtier, a professor at the Lyons Veterinary School, informed the Academy of Medicine in January, 1881, that he had tried ten times, unsuccessfully, to produce the disease by inoculating the product obtained by pressure of the brain substance, of the hind brain, or of the upper cord of rabid dogs. Pasteur, using a special technic for obtaining the brain substance, inoculated it under the skin of several animals, most of

which succumbed to hydrophobia. "But, said some one in the laboratory of Pasteur," according to Duclaux, "why not try to deposit the virus in the nerve centers, since it is there that it grows and reproduces itself?" "It was then that it occurred to Pasteur" says Vallery-Radot, "to inoculate the rabic virus directly on the surface of a dog's brain." And he proceeds to tell how the experiment was done. But at this point we shall let M. Roux, associate with Pasteur in this great work, continue the story:

> Ordinarily an experiment once conceived and talked over was put under way without delay. This one, on which we were counting so much, was not begun immediately. Pasteur, who had been obliged to sacrifice so many animals in the course of his beneficent studies, felt a veritable repugnance toward vivisection. He was present without too much squeamishness at simple operations, such as a subcutaneous inoculation, and yet, if the animal cried a little, Pasteur immediately felt pity and lavished on the victim consolation and encouragement which would have been comical if it had not been touching. The thought that the skull of a dog was to be peforated was disagreeable to him; he desired intensely that the experiment should be made, but he dreaded to see it undertaken. I performed it one day in his absence; the next day when I told him that the intracranial inoculation presented no difficulty, he was moved with pity for the dog: "Poor beast! His brain is without doubt wounded. He must be paralyzed." Without replying, I went below to look for the animal and had him brought into the laboratory. Pasteur did not love dogs; but when he saw this one full of life, ferreting curiously about everywhere, he showed the greatest satisfaction and straightway lavished upon him the kindest words. He felt an infinite liking for this dog which had so well endured trepanning, and thus had put to flight for the future all his scruples against it.



White Studio

HENRY MILLER AS PASTEUR IN GUITRY'S PLAY "PASTEUR"

This dog developed rabies in fourteen days and all the dogs treated in the same manner behaved similarly.

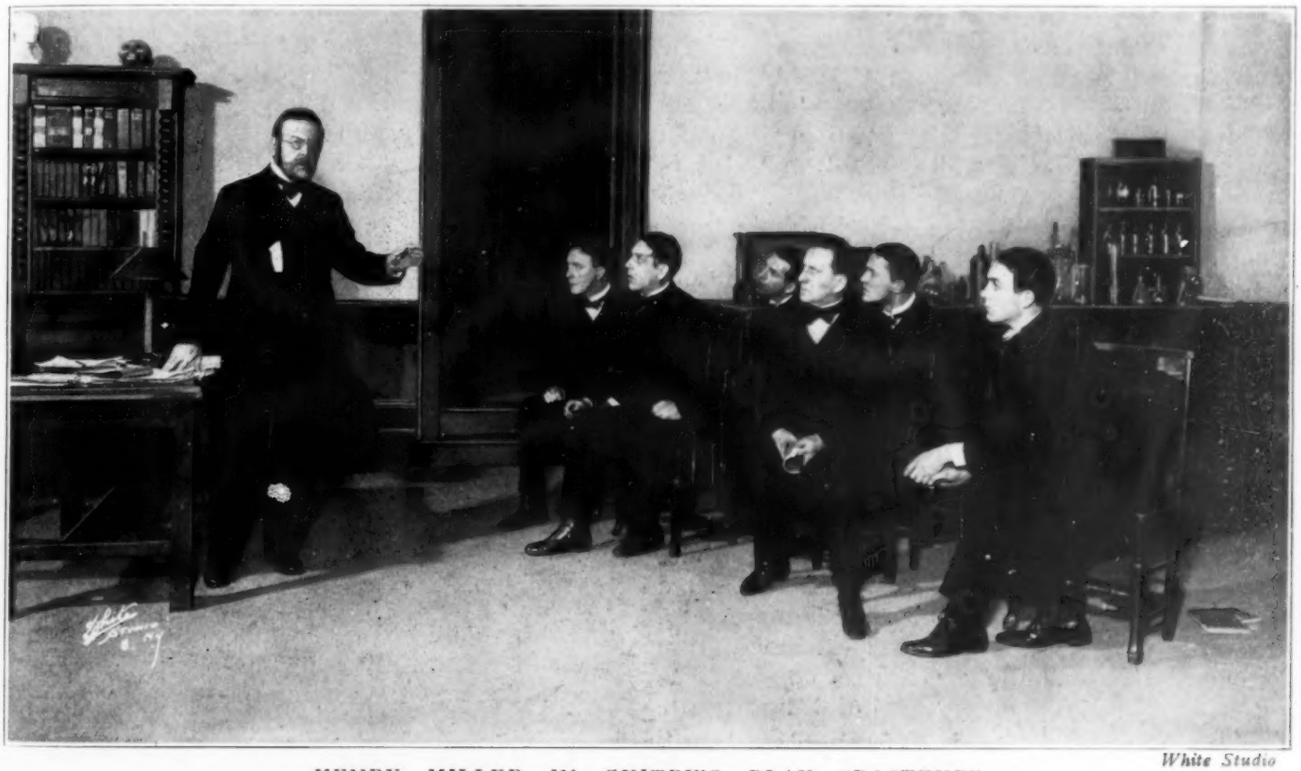
It is interesting that Vallery-Radot gives definitely the impression that Pasteur performed the experiment and even goes so far as to describe the exact technic and we must return to M. Vallery-Radot to follow the experiments further. Pasteur now determined that the only way to cultivate the organism was in the brain of living animals. The skulls of rabbits were trephined and the animals were inoculated with rabies; when they died some of the brain substance was inoculated into other rabbits whose skulls had been trephined: it was discovered, after one hundred inoculations with this method, that the incubation period of the disease could be reduced to seven days. Here it was fixed, and the experimenter could determine the exact time when death should occur in each inoculated animal. It was now determined to attempt to attenuate the virus or decrease its toxicity by allowing a portion of the spinal cord of the rabbit to become old in contact with pure air, just as the virus of anthrax was attenuated by exposing a pure culture of the organism to pure air. Thus it was discovered that the virus, after fourteen days' drying, is harmless in the strongest doses and that, up to fourteen days, there are variations in degree of weakening. A dog inoculated with the oldest spinal cord emulsion and then on succeeding days with fresher and fresher cord emulsions did not contract rabies and became immune to it. After protection in this manner, the animal could be inoculated in the eye or the brain with the strongest virus and still resist the disease, thus proving the possibility of conferring immunity to the disease within fifteen days. And since man, bitten by a mad dog, ordinarily does not contract the disease until a month or even a longer period after the bite of the rabid animal, this period of incubation is utilized for rendering the bitten person immune. But we are hastening along a bit too rapidly with the story. Let us pause to see with what misgivings the crucial experiment on man was attempted.

As the experiments with the protection of dogs were repeated and confirmed, Pasteur became intensely interested in the work. He

wrote constantly to his family who were at home. At one time he wrote to his son-in-law, "Keep my letters, they are almost like copies of the notes taken on the experiments." At the International Medical Congress in Copenhagen in August, 1884, he declared that rabies cannot be produced spontaneously; that it is invariably transferred from one animal to another; that it has thus been barred out from certain countries altogether. "It will be objected that there must have been a first rabid dog originally. 'That,' said Pasteur, 'is a problem which cannot be solved in the present state of knowledge, for it partakes of the great and unknown mystery of the origin of life.'"

In September, 1884, the emperor of Brazil inquired of Pasteur as to when the preventive treatment could be applied to man, and in a long communication Pasteur discussed its possibilities in this connection. "What I want to do," he said, "is to obtain prophylaxis of rabies after bites." He hesitated to make the crucial experiment, even after having multiplied innumerably the demonstrations of the efficacy of prophylactic vaccination in animals. He wrote:

> But even when I shall have multiplied examples of the prophylaxis of rabies in dogs, I think my hand will tremble when I go on to mankind. It is here that the high and powerful initiative of the head of a state might intervene for the good of humanity. If I were a king, an emperor, or even the president of a republic, this is how I should exercise my right of pardoning criminals condemned to death. I should invite the counsel of a condemned man, on the eve of the day fixed for his execution, to choose between certain death and an experiment which would consist in several preventive inoculations of rabic virus, in order to make the subject's constitution refractory to rabies. If he survived this experiment—and I am convinced that he would—his life would be saved and his punishment commuted to a lifelong surveillance, as a guarantee towards that society which had condemned him.



White Studio

HENRY MILLER IN GUITRY'S PLAY "PASTEUR"

[*Pasteur and a group of his students in his work room.*]

PASTEUR. . . . *The sixth of September, 1867, I sent the Emperor a note in which I brought to his attention the fact that I found it impossible to carry on my work without a laboratory. He was quite willing to transmit through Duruy the order to have the laboratory constructed immediately. In October of the following year it had not been commenced, and when I fell sick, a government order came to discontinue the work, because it was said that Monsieur Pasteur would not live the week out. The utilization of my discoveries was dependent on my life! And, if you sometimes see me sad and out of sorts, it is because I haven't always the strength to be angry. Discouraged, never!—Tired, sometimes—as today!*

When Pasteur had determined the means by which the occurrence of rabies can be prevented in dogs, he endeavored to devise a method for diminishing its frequency. It was absolutely impossible to vaccinate all of the dogs in France, for it was estimated that there were 100,000 dogs in Paris, and possibly 2,500,000 dogs in the rest of France. Vaccinations required numerous inoculations, during which the dogs must be kept under control, and, naturally, unless all of the dogs were inoculated, it would not be worth while to inoculate a few.

Further experiments were conducted on dogs and the methods were modified in many ways in order to test the procedure to the fullest extent. It was not, however, until July 6, 1885, that Pasteur finally had an opportunity to make the ultimate observation. On that day, an Alsatian boy, Joseph Meister, aged nine years, accompanied by his mother, entered Pasteur's laboratory. Two days before the boy had been bitten by a mad dog, and, too small to defend himself, had merely covered his face with his hands and suffered the attack. The boy had been taken to a local physician who had cauterized the wounds with phenol (carbolic acid), and then advised the boy's mother to take the child to Paris. There were fourteen wounds about the boy's hands, body and legs, and such wounds, experience had shown, were of the most serious type. Pasteur considered whether or not to apply the preventive treatment which had been so consistently successful in dogs. In order to aid his decision, he called on Vulpian, professor of general and comparative physiology in the medical school, who in his lectures on the nervous system had already mentioned the benefit to human beings to be derived from experimentation on animals; it was Vulpian's opinion that the experiments already performed were sufficiently conclusive to authorize Pasteur to foresee the same success in human disease. Furthermore, when the almost certain danger which threatened the child was weighed against the possibility of recovery following inoculation, it seemed no more than right to grant him the possible benefit of the method. This was also the opinion of Dr. Grancher, a physician who worked in Pasteur's laboratory. It was decided to perform the first inoculation immediately, and the substance chosen was rabbit's spine, fourteen days old, and quite without virulence. This was to be followed by further inoculation, gradually increasing in strength.

Vallery-Radot gives a touching picture of the relation of Pasteur to this child. As the inoculations became more virulent, Pasteur became exceedingly anxious, so that his wife wrote to his son-in-law:

> My dear Children: Your father has had another bad night. He is dreading the last inoculations on the child. And yet there can be no turning back now. The boy continues in perfect health.

Pasteur himself wrote:

> My dear René, I think great things are coming to pass. Joseph Meister has just left the laboratory. The three last inoculations have left some pink marks under the skin, gradually widening and not at all tender. There is some action, which is becoming more intense as we approach the final inoculation, which will take place on Thursday, July 16. The lad is very well this morning, and has slept well, though slightly restless; he has a good appetite and no feverishness. He had a slight hysterical attack yesterday.

The letter ends with an invitation—and a forecast. "Perhaps one of the great medical facts of the century is going to take place; you would regret not having seen it!"

The treatment lasted ten days; there were twelve inoculations. The dried spinal cords of rabbits used in the experiments were tested on other rabbits, by means of opening the skull, and making direct inoculation, and it was thus shown to be increasing in strength. Finally, on July 16, at 11 a. m., Pasteur inoculated the boy with a cord one day old which was bound to give hydrophobia to rabbits after seven days' incubation. It was a sure test of immunity. As is well known, the child was absolutely protected against the disease by the series of inoculations.

Pasteur departed for a vacation, and returned to Paris in October. October 14, he received word that a shepherd boy, fourteen years of age, had been cruelly bitten by a rabid dog while attempting to save six small boys. The dog had been pronounced unquestionably rabid by two veterinary surgeons. The mayor of the town wrote to Pasteur, and asked him whether or not the boy should be brought for inoculation. In this case, six days had elapsed, while in Joseph Meister's case there had been only two and one-half days. October 26, Pasteur presented a statement to the Academy of Sciences describing the case of Joseph Meister, and speaking of his attempt. Following Pasteur's address, Vulpian called for the installation of the treatment of hydrophobia by Pasteur's method. Other physicians, likewise, commented enthusiastically on the discovery. As soon as Pasteur's paper was published, people bitten by rabid dogs began to arrive at the laboratory from all sides, and the hydrophobia service became the dominating concern of the workers.

The first failure occurred November 9. A little girl of ten was brought who had been severely bitten on the head by a mad dog, thirty-seven days before. Her wounds were suppurating, and Pasteur was able to give but a doubtful prognosis. However, he did not resist his compassion for the father and mother and undertook the inoculations. The child died December 2.

From this point the action becomes rapid. Four American children were sent from New York under a popular subscription undertaken by the New York *Herald*, and all of them were successfully inoculated. March 18, 1886, nineteen Russians who had been attacked by a rabid wolf were brought to the laboratory, and three of these died. As may well be imagined, the opponents of Pasteur did not hesitate to emphasize the significance of such deaths. Nevertheless, Pasteur's services to many Russians who had received the treatment resulted in the award to him by the czar of the cross

of the order of St. Anne of Russia in diamonds and a contribution of 100,000 francs to a proposed Pasteur Institute. Then in April, 1886, a British commission, headed by Sir James Paget, and including such men as Lauder Brunton, Joseph Lister, and Victor Horsley, arrived to study Pasteur's methods. The opinion of this commission may be gathered from the following answers of Sir Lauder Brunton in response to a parliamentary inquiry on the question of animal experimentation:

Q. Have you any practical experience of the Pasteur treatment? A. Yes, I was a member of the Commission sent across to investigate the utility of Pasteur's treatment. I went over, perfectly convinced that Pasteur was wrong.

Q. What was the date of that Commission? A. About 1884 or 1885. But I came away, perfectly convinced that Pasteur was right. And there is no doubt whatever, I think, in the mind of any unprejudiced person, that Pasteur's treatment has produced a complete revolution in the treatment of hydrophobia. Hydrophobia was a most frightful disease. Just before I went over I was a member of a Committee of the British Medical Association to investigate hydrophobia; and I went throughout all the country examining cases, and the cases I saw were simply heartbreaking. As the result of it I got inoculated, and had to burn it out.

Q. Your own finger got inoculated? A. Yes, unfortunately, with rabid poison when making a post-mortem examination.

Q. What treatment did you pursue yourself? A. Caustic potash; there was nothing else. I took a stick of caustic potash and rubbed it in, and scraped it out, and rubbed it in again.

Q. Did you go through Pasteur's treatment? A. No, it was before Pasteur's treatment; that was the only treatment available at the time, but it does not improve the fingers.

Q. You satisfied yourself on that Commission that Pasteur's treatment saves life? A. Absolutely.

And Sir Victor Horsley said:

I had the honour of acting as secretary of a Committee that was appointed by the Government to inquire into M. Pasteur's treatment: and when the Committee was in Paris, M. Pasteur said to us, 'Why do you come here to study my method? You do not require it in England at all. I have proved that this is an infectious disease: all you have to do is to establish a brief quarantine covering the incubation period, muzzle all your dogs at the present moment, and in a few years you will be free.' . . . Immediately this point of universal muzzling was raised, the antivivisection party entered upon a virulent campaign against us, and held meetings, and endeavoured to show that M. Pasteur's discovery of the real infective nature of the disease was wrong: they revived the old ideas, that it was lunacy in dogs, that it was not a disease; and they revived also the particularly dangerous idea (from the public point of view) that it could spontaneously generate in the dog: whereas M. Pasteur had proved that the exact opposite was the case. The effect (of muzzling) was wonderful in immediately cutting down our admissions of rabies, and that it also cut down another contagious disease, distemper. The effect of that was, that Mr. Walter Long, when he was at the Board of Agriculture, imposed a universal muzzling and brief quarantine: with the result that fortunately now the United Kingdom is free from rabies.

White Studio

HENRY MILLER IN GUITRY'S PLAY "PASTEUR"

PASTEUR [*addressing the Academy of Medicine*]. *But what sort of an idea have you, then, in regard to scientific progress? Science takes a step, then another, then it stops and reflects before taking a third! Does the impossibility of taking this last step nullify the good results from the first two? A mother takes her nursing child and puts him down and says to him: "Walk!" The child takes a step, then another, then stops unsteadily . . . Would you do right, then, to say to him: "You're hesitating, you'll never walk!" Let me tell you that the characteristic feature of true theories is their fruitfulness. Moreover, I have decided to reply today to certain insinuations which I can no longer tolerate!*

Certain of my adversaries think, for example, that on the question of spontaneous generation, I am obeying a prejudice, a conclusion formed in advance.

I consider such insinuations insulting.

Rabies disappeared from England following quarantine and muzzling, and did not reappear until the World War, when an infected dog was brought in by aeroplane. The disease has now been stamped out again.

THE RESULTS OF THE PASTEUR TREATMENT

It now becomes possible to speak of the results of the Pasteur treatment. Today we possess positive means of diagnosing hydrophobia. By the inoculation of rabbits with the material taken from the brain of the suspected dog, we have valuable information concerning the properties of the rabic virus, its distribution in the body, the manner of its dissemination, the differences in its action according to the mode and place of inoculation, and the means of producing immunity against it. During the years 1886 up to and including the first half of 1888, there were treated under Pasteur's supervision 5,374 persons who had been bitten by animals, either proved or suspected to be rabid. The mortality among these persons

averaged approximately 1 per cent. If the fatal cases which developed within fourteen days after the end of the treatment are excluded, the mortality falls to little more than 0.5 per cent. For comparison it may be said that the statistics of cases in which there were bites on the head and face indicate a mortality of 88 per cent. Of all persons bitten by rabid dogs, at least one in ten develops the disease. While Pasteur's work on rabies is not, perhaps, the most significant of his numerous accomplishments for the benefit of mankind, it is unquestionably the most significant in the effect it has had in securing public support for scientific medicine and experimentation. It was this work particularly which resulted in the founding of the Pasteur Institute. Whereas numerous scientists have experimented with modifications of Pasteur's original method, in Paris the original technic continues to be followed successfully.

Honors continued to pour in on the great master from every section of the world. The Academy of Sciences induced him to become its life secretary. The Institute was founded with extensive ceremonies in his honor, and it was constructed with a subscription of more than 2,500,000 francs, in the contribution of which rich and poor alike had joined. In his speech of response, Pasteur said:

> Worship the spirit of criticism. If reduced to itself, it is not an awakener of ideas or a stimulant to great things, but, without it, everything is fallible; it always has the last word. What I am now asking you, and you will ask of your pupils later on, is what is most difficult to an inventor.

In 1892, all of the countries of the world united in homage to the great investigator in honor of his seventieth birthday. Appeals came from all over the world that he give his attention to the investigation of practically every disease known to mankind. It is, perhaps, well to render him our homage on the one hundredth anniversary of his birth in the words accredited to the premier of France by Sacha Guitry in the great play which he wrote and entitled "Pasteur."

THE STUDENT *(announcing)*. The President of the Republic. . . . *(Pasteur makes an effort to rise, but the President of the Republic comes to him so quickly that he hasn't time to do so.)*

THE PRESIDENT OF THE REPUBLIC. I don't want to enter the hall without you, Monsieur Pasteur . . . because it is not I for whom they are waiting . . . and I've come to get you. I wish, before any one else does, to express to you, in the name of your country, the eternal gratitude which is due you. By your genius, you have saved human life . . . from the most terrible ills . . . France, and the whole world, bring to you today the testimony of their respect and of their veneration. The noblest and choicest words are all too feeble, Monsieur Pasteur, and seem poor indeed . . . when used in connection with you! You are a great man when you might have contented yourself with being a great scientist. Your life will be an inspiration . . . and from the bottom of my heart I hope that it may be prolonged a great while so that you may witness the inestimable benefits of your wonderful discoveries. Already thousands and thousands would be dead but for you . . . and that's why we're so moved in your presence! You have reproached us often for not having enough veneration for great men. . . . You have counseled us to honor especially those who, in science, in letters and in art have contributed greatly to the glory of their country . . . and I'm happy today to be able to follow your advice . . . I'm happy and proud to be able to say these things to you! Will you permit me, Monsieur Pasteur, to embrace you in the name of France?

CUT IN HALF

The estimate made by the National Tuberculosis Association at the beginning of 1922 that the death rate from tuberculosis for the preceding year would show a reduction of 100 per 100,000 has been confirmed by recent figures published from the Bureau of the Census. These figures show that the death rate from tuberculosis, all forms, in the registration area for 1921 was 99.4. Contrasted with the death rate of 200.4 in 1904, when the National Tuberculosis Association was formed, this is more than a cut in half.

There is much statistical speculation with regard to the causes of decline in the death rate. There is, however, no difference of opinion on this point: that the tuberculosis movement as engineered and sponsored by the National Tuberculosis Association has had a vital part in this reduction. How big a part, probably no statistical expert will ever be able to evaluate.

JOURNAL OF OUTDOOR LIFE.

Hay Fever: The Early Summer Type

I. CHANDLER WALKER

GORDON, an English physician, writing in 1829, ascribed hay asthma to sweet vernal grass, partly on account of the strong odor of the plant, and partly "because as soon as it begins to flower, and not until then, the asthma commences; and as the flowers arrive at perfection, the disease increases, and after they have died away, I have remarked that patients could pass through the most luxuriant meadow with immunity." Elliotson, another English physician, in 1831, observed that the disease did not appear "till the grass comes into flower, and as long as there is any flower remaining on the grass, the disease continues," and he expressed the opinion that the symptoms seemed to "depend upon the flowers of the grass and probably upon the pollen." Kirkman, a German physician, seems to have been the first patient who tested, by experimenting upon himself, the pollen of grass. In his hot-house for flowers he found in the winter one single plant of the sweet vernal grass (*Anthroxanthum odoratum*) in blossom, and loaded with pollen. Thinking this an excellent opportunity for testing this particular grass, he plucked it, rubbed the pollen in his hand and sniffed it up his nose. Almost immediately it brought on sneezing and all the symptoms of hay fever, which continued for an hour. Blackley, an English physician who suffered from hay fever, first noticed that a severe attack was produced by smelling a bouquet of grasses in a closed room, and from that observation he was induced to experiment on himself with the pollen of more than a hundred kinds of plants; he found that grass pollen gave him hay fever symptoms in an intense degree, and that the severity of his symptoms increased and decreased in proportion to the amount of pollen in the air. By observation and experimentation it has been established that the seasons of pollination of the grasses and of the symptoms of early summer hay fever are identical and that patients who are affected by the light and abundant grass pollen, present everywhere in the air, are rarely affected by the pollen of other plants which blossom at the same time, even when the pollen is sniffed directly up the nose; therefore, the principal cause of early summer hay fever is the pollen of grasses.

The early summer type of hay fever, discussed in this paper by Dr. Walker, is almost impossible to avoid, since it is caused by the grasses, which grow in all parts of the world. Better news is the fact that it can be treated quite adequately, as Dr. Walker describes. The next paper in this series will be of greatest interest to the persons who suffer most and longest from hay fever, for theirs is the autumn type, caused by the numerous members of the Compositae family.

Hay Fever from Grasses Difficult to Avoid

Grasses grow wherever the rainfall is sufficient to maintain plant life and the temperature is above freezing at least part of the year, and since they readily adapt themselves to conditions of soil and climate, they are distributed all over the world. The grasses vary in size from plants a few inches high to bamboo trees, which are sixty feet high, and in habitat from the fertile soil of the prairie to the arid sand dunes of seashore and desert. Thirteen hundred species of grass are indigenous to the United States. Since grass pollens, shed abundantly from the inconspicuous green flowers, are blown by the wind to considerable distances, the early summer form of hay fever is almost universal, and patients affected by grasses usually cannot avoid hay fever by change of climate, except by taking a long sea voyage.

The season of early summer hay fever, caused by pollens of grasses, follows the period of spring hay fever due to the pollens of trees, and in the southern part of the United States this period begins very early, before the first of May, and in the northern part it begins in late May or early June. The particular kinds of grass that are common causes of hay fever vary with the locality and have to be worked out by determining the seasons of pollination, the amount of pollen produced, and the abundance of the grass; the final determination is made by testing hay fever patients with the pollens of the grasses that pollinate at the time of the symptoms. Rare grasses and varieties that grow only in remote regions do not have to be considered, except in an unusual patient who is especially exposed to them, but all grasses are potential causes of hay fever, unless the pollen is extremely heavy. The early spring grasses frequently begin to shed their pollen before the trees have finished pollination, and while there is usually a period of freedom from hay fever between the spring and the early summer, in some localities and

in very warm springs, the two seasons may overlap. The second period of hay fever is marked by more severe symptoms than the first, and as a rule, by a longer and more definite period of duration. The symptoms of hay fever from grasses may come on very gradually, not reaching the maximum severity until the grasses are in full bloom.

In New England the grasses begin to pollinate about the middle of May. One of the most common of the spring grasses, the so-called lawn grass, grown on cultivated lawns and noticeable for the delicate feathery panicle waving at the top of a slender, wiry, short, naked stem, begins to pollinate about the middle of May. Since symptoms of hay fever usually do not appear until about the first of June, after lawn grass has finished pollination, this variety of grass is probably not a common cause of hay fever, although when it blossoms again at intervals throughout the summer its pollen may aggravate the symptoms in patients who already have grass hay fever. Orchard grass and many other grasses pollinate in June and July, each at its own particular season, but since the period of pollination is very short or these grasses are not commonly encountered, they are not frequent causes of hay fever, except locally where they are especially abundant.

June grass (Poa pratensis), the pollen of which is the principal cause of hay fever during May and early June in various localities throughout the United States.

In New England Three Grasses Most Responsible

By a careful analysis of the history of cases of grass hay fever in New England, the season is found to be subdivided into two short but distinct periods. The first period continues for three weeks from the last week in May through the first two weeks in June. The conspicuous grass in pollination at this time is June grass (*Poa pratensis*), which sometimes begins to pollinate about the middle of May and usually stops by the middle of June. June grass, or Kentucky blue grass, is tall and slender with the flowers in a loose and rather coarse panicle; it is much used as a lawn grass, and for pasturage and hay, and although it is said to grow best in a limestone soil, it occurs almost everywhere. The second period of early summer hay fever begins about the middle of June and continues for nearly six weeks to the middle or end of July. The chief grasses in pollination during June and July are red top (*Agrostis alba*) and timothy (*Phleum pratense*). Red top is a favorite perennial forage grass of the northern states. The flowers are in a fine cone-shaped panicle at the top of a wiry stem, and the bracts which enclose the flowers are often tinged with a reddish blush which gives a reddish hue to the plant and to a field of the grass, and from this color the common name red top is derived. Timothy, with its tall green stalk and the pencil-shaped gray green spike at the top, like a small cat tail, is one of the most familiar and most prized of the grasses grown for hay. The spike is covered with bristles and bears several hundred flowers from which, at the time of pollination, the white or lavender stamens protrude to shed the pollen. In New England, patients who have early summer hay fever must be tested with the pollen of these three most common grasses, June grass, red top, and timothy.

Tests with Pollen of Roses

In addition to tests with the three common grasses, all patients who have early summer hay fever in New England should be tested with rose pollen, partly to convince the large number of patients who believe they are affected by roses that they are not, as shown by the skin tests, positive with pollens of grasses, and chiefly to discover the occasional patient who really gives a positive reaction to rose pollen and should be treated with it. The rare patient, usually a florist or a gardener, whose tests with rose pollen are positive and with grass pollen are negative, really suffers from "rose cold." The usual patient who mistakenly calls his hay fever by the more poetic name "rose cold" blames the rose for his trouble because roses blossom during the time of pollination of the grasses, and the roses are conspicuous, while the green flowers, at the top of innumerable grasses in every meadow, that are sifting pollen into the air are not noticed by the patient.

Tests with Pollen of Maize

In the common Indian corn, or maize, an important member of the grass family familiar to all, the pollen grows in the stamens, which are situated in the conspicuous tassel at the top of the stalk. In July and August the heavy yellow pollen grains sift down, if the stalk is jostled, in a little golden shower, and the shin-

ing green leaves and the undeveloped ears, with the ends of the corn silk projecting from the husks, are fairly dusted with pollen. The kernels of corn, which grow on the cob inside the husks, cannot round out, so as to be eaten as green corn, nor ripen for seed, unless they are fertilized by the pollen. From each undeveloped kernel, a shining green silk thread reaches out beyond the end of the husks, and when a pollen grain falls from the tassel onto one of these corn silk threads, it grows down the silk until the kernel is reached and fertilized. If only a few silks are touched by pollen grains, only a few kernels on the ear develop. If some of the silks are touched by pollen grains from a different kind of corn with colored kernels, a speckled ear results. Since corn pollen is too heavy to be carried more than a few feet by the wind, it causes hay fever only in persons who cultivate and gather green corn, and an occasional sensitive person who may be affected by the few pollen grains that cling to the husks of green corn after it is gathered. Treatment with corn pollen, except for growers of corn, is almost never necessary, because the sensitive patient can avoid it.

Hay Fever from Other Flowers

In New England many other plants besides the grasses and roses blossom during June and July, such as clover, daisy, dandelion, lily, plantain, pig weed, smart weed, pepper grass and dock. An occasional patient gives a positive reaction to daisy, but since such a patient usually has fall hay fever which is caused by ragweed, a member of the same botanical family as the daisy, this reaction is a result of the botanical relationship between the daisy and the ragweed, and usually does not mean that the patient has hay fever caused by daisy pollen. The daisy produces only a small amount of pollen, and a patient should not be treated with it unless he has symptoms during the time when daisies are in blossom and fails to react to the pollen of grasses and other wind-pollinated plants that flower at the same time. One or two cases of hay fever from plantain pollen are on record. Most of the other plants in flower during the early hay fever season produce scant and heavy pollen, or they are altogether insect pollinated, and for this reason in most cases they need not be considered causes of early summer hay fever.

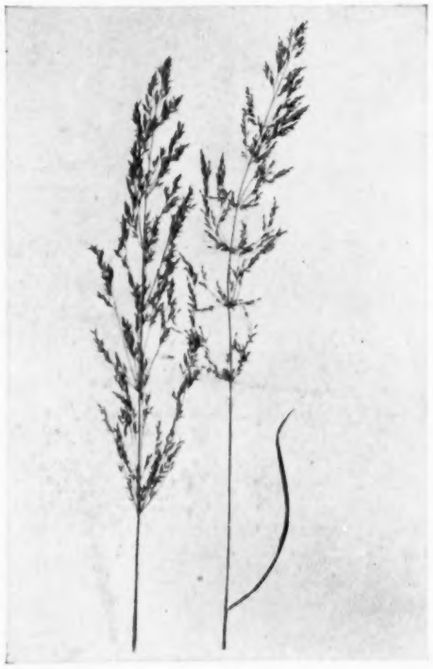
Timothy (Phleum pratense), the most important of the hay fever causing grasses which bring misery to persons in about half the states of the Union, east, south, middle-west and west, from early to late summer. Fortunately treatment can relieve many patients.

In parts of the country other than New England, the common varieties of grass and the periods of pollination vary according to the locality, and only studies of local flora can determine the plants that most frequently cause hay fever and with the pollen of which the patients should be tested and treated.

West and Southwest

In the northern and mountain counties of California, and in Oregon and Washington, timothy is much grown for hay and pasturage, and is one of the important causes of hay fever from June through August. Throughout the same range is red top, reported as a frequent cause of hay fever from June through September. Kentucky blue grass, the June grass of New England, much used for pasturage in the northern part of California and for a lawn grass throughout the state, is a common cause in spring, summer, and autumn; another variety of the same species (*Poa annua*), walk grass, common in lawns, is of less importance. Orchard grass (*Dactylis glomerata*), occurring throughout the state, especially in meadows and pastures of northern California, Oregon, and Washington, pollinates from March through August, and is apparently one of the most active of grass pollens. Johnson grass (*Andropogon halepensis*), pollinating from March to August, is of great importance in moist places, particularly in the Sacramento and San Joaquin valleys, and about Pomona and Los Angeles. Less well known in relation to hay fever are Sudan grass (*A. sorghum sudanensis*), pollinating in July and August, and Kaffir corn, Egyptian corn, and Milo maize, extensively grown in warm valleys and pollinating in the summer. The wild oat (*Avena fatua*), extremely abundant in coast counties the full length of California, is of some importance during its pollination in the spring. Annual quaking grass (*Briza minor*), fairly common from middle California northward, is important in the Sacramento Valley and the north coast towns from April to July. Downy brome grass, one of the most abundant of the introduced grasses in the

western states, especially in Nevada, pollinates in early spring. Soft chess or poverty grass (*Bromus hordeaceus*), the most abundant grass in the coast ranges, common near towns, is important during its period of pollination in spring. Brome grass (*B. carinatus*), found in coastal counties and at middle altitudes in the mountains, pollinates from March to May and in June in the northwest. One of the worst hay fever grasses is broncho grass (*B. villosus*), abundant throughout the state in vacant lots and waste places, and blooming in the spring, especially May and June. Bermuda grass (*Cynodon dactylon*) is an abundant grass in low moist lands, especially where the soil is slightly alkaline, in all the warmer parts of the state, and it blossoms from May to October. Barnyard grass (*Echinochloa crus-galli*), the most abundant weed in rice fields and common in all moist places, pollinating from July to November, and the giant wild rye (*Elymus condensatus*), a very coarse grass growing in clumps in moist places around resorts and in natural parks, where it pollinates from June through September, extend the long season of the pollination of the grasses well into the autumn. Rye grass (*Lolium perenne*) is one of the most common of pasture and lawn grasses from San Francisco north to Oregon, wherever there is copious rainfall, and it pollinates in May and June. Other grasses are important in peculiar habits, particularly salt grass (*Distichlis spicata*), abundant in low alkaline valleys of the interior and in saline soil along the coast, and the tawny beard grass (*Polypogon monspeliensis*), common in moist places along ditches and in river bottoms and skirting the streams in the desert mountains.



Red top (Agrostis alba), not so mischievous as timothy, since it does not appear in so many states.

The cultivated oat (*Avena sativa*), grown in northern California and escaping along fields and roadsides, pollinates in the spring and may occasionally cause hay fever. Barley is a common crop in all parts of the state except in the mountains and desert, pollinating in spring, and may be a cause of hay fever. Wheat, cultivated in nearly all parts of the state, is usually self pollinated, but since a few plants in a field throw out a small amount of pollen in the spring, there is a possibility of its causing trouble within a small area only because of the large size of the pollen grain; it is harmless at the time of harvesting. Alfalfa, grown abundantly in all agricultural districts, belongs to the pea family. The pollen is carefully protected by the pea blossom shaped flower, so that it cannot escape into the air, unless the flowers are dried and pulverized, as in the curing or baling of hay cut when in bloom. The amount of pollen produced is fairly large, but winds blowing across a field do not carry alfalfa pollen.

In Arizona the second hay fever season, which includes April and May, is dominated by Bermuda grass. This grass, introduced as a lawn grass, is spreading widely. Although it blooms more or less all the year, the first period of blooming ends when the summer rains come in June, and it blooms a second time later in the summer; so Bermuda grass causes a spring, summer and autumn type of hay fever, and is probably the common grass causing hay fever in regions below an altitude of 4,500 feet. Above that altitude, Kentucky blue grass prevails. Johnson grass blooms profusely from May to frost, but since the pollen is almost as heavy as that of corn, it affects only persons who are directly exposed to it. Some persons are sensitive also to Milo maize and buffalo grass.

In the mountainous regions and the Pacific Coast region, the problem is complicated by the long season, the remarkable variation of the flora according to altitude and rainfall, and the large number of native and introduced grasses. It is difficult to name any individual grass or group of grasses as of primary importance throughout the whole area.

East of the Rocky Mountains

East of the Rocky Mountains timothy, red top, and Kentucky blue grass are commonly cultivated, but their periods of pollination vary to some extent according to latitude, altitude, and season. In Colorado and Idaho, the brome grass, short awned chess, feather bunch grass and Colorado blue stem are common causes of hay fever. In the agricultural states of the Mississippi basin, the common native and cultivated grasses, and in addition the grains, such as wheat, oat, barley, and corn and alfalfa, have to be taken into consideration as causes of hay fever. Oat and barley, as shown in the discussion of the hay fever plants of California, may occasinally cause hay fever during their time of pollination in the spring,

but not at the time of harvesting. Wheat and corn, on account of the large size of the pollen grains and the fact that wheat is self pollinated, may cause hay fever only within a very restricted area and by close contact. Alfalfa, which is not wind pollinated, does not cause hay fever unless the pollen is shaken from the dried and pulverized blossoms as in curing and baling hay cut when in bloom. In Florida, Georgia, and Louisiana, in addition to the Bermuda and Johnson grass, important as hay fever plants in warm climates, crab grass and yellow fox tail grass are considered important causes of hay fever. Locally, other varieties of grass which may be particularly abundant, are important causes of hay fever. Throughout the whole area east of the Rocky Mountains, except in the far south, timothy, red top, and Kentucky blue grass, which are of first importance in New England, are important factors in the cause and treatment of early summer hay fever.

Johnson grass (Sorgum halapénse) claims its victims to hay fever in moist areas in California and in the southern states. Since its pollen is almost as heavy as that of corn, however, it affects only persons directly exposed to it.

Test Discovers Pollen Causing Hay Fever

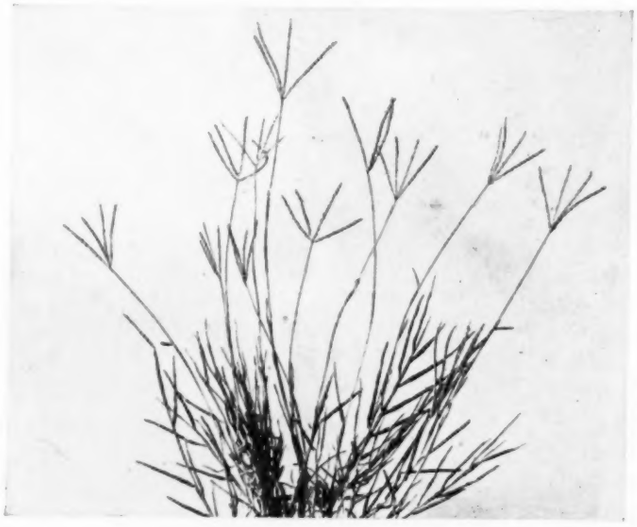
Tests with pollens to learn which ones affect the patient and cause the hay fever are made on the inner surface of the forearm by scratching the skin lightly with a sharp knife so that an incision about one eighth of an inch long is made, not deep enough to draw blood, but deep enough to penetrate the outer layer of the skin. A small amount of the dry pollen of the plant suspected (as much pollen as can be picked up on the point of the scalpel) is placed on the scratch, moistened with a drop of weak alkaline solution, and kept moist for thirty minutes. A large number of skin tests can be made at one time, even as many as several rows of scratches running the length of the forearm, if necessary. At the end of half an hour the pollens are washed off and the reactions are read. A control scratch, a scratch which was moistened with alkaline solution only, is compared with the scratches to which pollen was applied. The pollens which do not affect the patient, and which therefore are not the cause of his hay fever, have no effect, so that the scratches to which they were applied look like the control scratch. But the pollens which do affect the patient and are the cause of his hay fever produce itching and swelling of the skin around the cut for from an inch to perhaps two inches in diameter. The itching becomes more intense and the area of swelling increases in size the longer the pollen is kept on the scratch. After this swollen, raised, usually white, area around the scratch is washed, its outline is more or less irregular, and it changes and spreads as the pollen's protein, which is really the substance responsible for the symptoms, travels through the lymph channels of the skin. The raised area is usually surrounded by a flushed zone. This effect, evidenced by an area which looks like a hive or a mosquito bite, is called a positive reaction. Within an hour or two the itching and swelling disappear, and after a few days the scratches heal, without leaving a scar. This test, remarkable for its simplicity, is very quick and almost painless, but it gives absolute proof as to which plants are the cause of hay fever in the individual case. If the patient is affected by several pollens, a series of tests with dilutions of the pollens can, by the degree of reactions, distinguish even between the pollens that affect the patient only slightly and those that are harmful even in minute amounts. This test was foreshadowed in the experiments of Blackley. He scraped the skin of each forearm, making a raw area perhaps an inch in diameter, as for inoculation with smallpox by the old method, and to one arm he applied moist pollen. The pollen caused a raised, itching area, sometimes involving the whole arm, while the other arm, in spite of the scraping, did not itch or swell. In medical terms, a patient is said to be sensitive to pollens if they produce hay fever or asthma when he inhales them and if they cause a positive reaction when applied to the skin. This sensitization is an individual idiosyncrasy, since normal persons can inhale large amounts of pollen without harmful effect.

Variations in Sensitiveness to Pollens

Since a patient who has grass hay fever is liable to be affected more or less by the pollens of all the grasses, although one or two usually give much stronger reactions than the rest, it is necessary to determine by testing with dilutions of the pollens which grass is the principal cause of the hay fever and with which treatment should be given. These dilu-

tions, which are made by adding salt solution to the dry pollen, vary in strength from very weak dilutions containing one part of pollen to twenty thousand parts of salt solution, to those containing one of pollen to one hundred parts of salt solution. To the strongest dilution the area of reaction on the skin is almost as large as to the whole pollen, but as the concentration of pollen grows less, the size of the reaction diminishes in proportion, until a dilution is found so weak that it does not give any reaction. If a patient is sensitive to two grasses which pollinate at the same time, he may be ten or one hundred times as sensitive to one grass as to the other; that is, the skin test to one grass may be positive only to a dilution of 1: 1,000 of the pollen, and to the other it may be positive even to a dilution of 1: 10,000. In the treatment of such a case, injections are given with pollen extract of the common grass to which the patient is most sensitive.

When patients in New England who have early summer hay fever are tested with the three most common grasses, June grass, red top, and timothy, the reactions to the whole pollen may eliminate one or more of the grasses as the cause of hay fever, and the tests with the dilutions of pollen indicate the degree of sensitization and the pollen that should be used in treatment. Patients who have hay fever only in late May and early June usually react markedly to June grass and less markedly or not at all to red top and timothy. Patients who have hay fever only in late June and in July usually are more sensitive to timothy and red top than to June grass. Patients who have hay fever from late May or early June to nearly the end of July react more or less to all three grasses, but they are liable to show the strongest effect from timothy.



Bermuda grass (Cynodon dactylon), growing in low moist portions of California, in Arizona, and in the far southern states, must be shunned by persons susceptible to the pollens of grasses.

Methods of Treatment for Various Cases

Hay fever during only the earlier period of six weeks is best treated with pollen extract of June grass. Hay fever during the second period of six weeks is best treated with pollen extract of timothy; it protects the patient against the pollen of red top, unless the patient happens to react markedly to red top and only slightly or not at all to timothy, which is very rarely the case. Persons sensitive to red top only are treated with its pollen extract. Persons who have symptoms throughout the season and are sensitive to all three grasses are the most difficult to treat, but experience has shown that 90 per cent. of these are treated most satisfactorily with pollen extract of timothy alone, because such treatment, if started early enough, gives protection against the pollens of other grasses, except June grass, which pollinates so early that not sufficient treatment has been given to protect against it. Treatment with mixtures of two or more pollens is very unsatisfactory because not enough of any one is given to produce immunity, while at the same time the patient is liable to have much greater discomfort from the injections. It is important in all treatment of hay fever to determine by skin tests which pollen is the principal offender in causing the symptoms, and to treat with the extract of that pollen alone, always testing the patient with the solutions to be used in treatment.

Treatment Before the Season Best

The best method of treatment is preseasonal and preventive; it should begin three or four months before the time of onset of the hay fever symptoms. From fourteen to sixteen injections of small amounts of the extract of the pollen to which the patient is most sensitive are given under the skin of the upper arm, at intervals of at least five days, and preferably seven. The first injection is about three drops of a dilution so weak that it does not cause reaction on the skin, and the amount is gradually increased from week to week, so slowly that the patient feels no ill effects from the treatment, beyond a slight local reaction, and even this effect is avoided, if possible. By this gradual increase in the dosage, the tolerance of the patient is increased until at the end of treatment he does not feel any ill effects from breathing the pollen in the atmosphere. This preseasonal method of treatment should be finished a week or ten days before the usual time of onset of the symptoms. Therefore, in order to complete the schedule of injections previous to the beginning of the season of pollination of the

grasses in late June, and of the usual period of hay fever, treatment with timothy or red top pollen should begin not later than the middle of March; for the hay fever caused by June grass, treatment should begin about the first of March. The results of sufficient preseasonal treatment of early summer hay fever are very satisfactory, with only a rare case that is not at least greatly relieved of the usual symptoms. Nearly one third of the patients have only one half as much hay fever as usual, another third have about one fourth as much hay fever as usual, and one third of the patients are almost or entirely free from symptoms.

Treatment During the Season

Many patients do not apply to a physician for treatment until after the appearance of symptoms. Treatment during the season is less satisfactory than the preventive treatment, because injection of the pollen to which the patient is most sensitive at the time when he is breathing it in the air may result in an overdose, due to the combined action of the injected and the inhaled pollen, and the symptoms may be made worse instead of better. Some patients may be greatly relieved by the injection of small amounts of pollen after the symptoms have set in, however, and the chance of relief makes treatment during the season well worth trying. Great care is taken to determine by the skin tests the dilution which is just weak enough not to give a positive reaction, and for the initial dose only about three drops of this weak dilution is injected. Usually not more than four or five injections are given during the season, at five-day or weekly intervals, and the amount is gradually increased, as in the preventive treatment. Although few patients are completely relieved of hay fever by treatment during the season, and about one half of the patients are not helped at all, a little more than half of the patients who try this method have only from a fourth to a half as much hay fever as before, and many who had to stay in a darkened room are able to go about their work, even though the sneezing and watering of the eyes do trouble them, and patients who have less severe symptoms may escape with occasional fits of prolonged sneezing. Treatment after the season of hay fever has begun would hardly be worth attempting if the patient could go to some locality where the plant that causes his hay fever does not grow, but there is no such escape from hay fever from grasses, and the treatment may well be tried on the chance that it will give some relief.

Sweet vernal grass (Anthoxanthum odoratum) grows in a few spots in the New England states, to the grief of the sufferer from hay fever.

Treatment Before and During Season

Still another method of treatment is adapted to patients who apply for treatment some time before the usual time of onset of the symptoms, but too late for a complete treatment before the season. Such patients are tested in the usual way, and the first doses are injected according to the preseasonal schedule of injections, and the injections are continued when the grasses pollinate and it is time for the hay fever to appear, and gradually increased right through the hay fever season. The results of this method of treatment are not nearly so satisfactory as from preventive treatment, but a much larger number of patients are given marked relief than from treatment during the season.

In some cases of hay fever from grasses the patient is sensitive to both timothy and June grass; in such difficult cases the best method of treatment is complete preseasonal treatment with pollen of timothy, which will protect the patient from the effects of red top and other late grasses, and several small doses of the extract of the pollen of June grass, graded as for treatment during the season, given in combination with the timothy treatment during the time of pollination of June grass, when the patient usually has hay fever, since not enough timothy pollen has been injected to protect him against June grass pollen. The two kinds of pollen extract may be measured into the same syringe and given as one injection. Some relief is given for the June grass hay fever, and the treatment with timothy for the later and usually more severe period of grass hay fever is not interfered with or delayed.

In all cases, the patient who suffers from early summer hay fever should be tested with the pollens of the common grasses and other wind-pollinated plants that produce pollen abundantly at the time of his hay fever in the locality where he lives. Treatment should be given with the pollen to which the patient is most sensitive and which is so abundant and so widely distributed that he cannot avoid it.

"PATENT MEDICINES"

III. The Part Played by the Testimonial

ARTHUR J. CRAMP

IT is a characteristic human trait to give a certain amount of weight to the testimony of our fellows. And in general we are justified, for, in the ordinary affairs of life, the opinions of one man are likely to be as good as those of another. So long as testimony is confined to subjects on which the person testifying is qualified to express an opinion, it is competent and it may be valuable. But when the testifier leaves the field of his own knowledge and trespasses on paths to which he is a stranger, his testimony becomes worthless.

"My aunt used it, and she got well in no time," declares the person of faith in Runalax. But that's no reason to believe that the Runalax made her well, instead of nature unassisted by mixtures of doubtful value or decided harm. In this paper, Dr. Cramp shows how many a testimonial is but the forerunner of the death notice of the person who gave it.

Whether a testimonial may or may not do harm does not depend altogether on the fact that it comes from an incompetent source. To be harmful it must be circulated among those who, from lack of knowledge, do not see its fallacies and are likely to accept it at its face value. That is why the naive young thing who testified at a "Christian Science" experience meeting did little damage to the cause of truth. She was telling of the sad case of a litter of kittens that came into the household. She explained that these poor mites of felinity were born *blind* and she told how she had worked over them to overcome this mortal error. After nine days' effort in this field the eyes of the kittens opened! This testimonial for the power of "Science" failed to carry conviction to the audience because most of those present were familiar with the simple physiologic facts involved. Had her hearers been as ignorant of feline physiology as the average person is of the facts of human pathology, it is conceivable that the anecdote would have been accepted as a strong testimonial to the power of "Christian Science."

The fallibility of human testimony is notorious. Although the power of observation possessed by most of us is poor, we are likely to become most positive in testifying to what we have seen or to what we think we have seen. Caution in expressing opinions is not a common trait. The Scotchman who could never be tempted into making an explicit statement was a specimen of an unusual type. It is recorded that on one occasion an attempt was made to get this cautious Caledonian to express himself without qualification. A flock of sheep, freshly sheared, was being driven past his house and he was called to the window and asked if it were not a fact that the sheep were sheared. His reply was that they seemed to be on the side that he could see. Few of us are so cautious.

The Patent Medicine Testimonial

The "patent medicine" testimonial is as old as the nostrum industry. Its commercial value is high because it is supposed to represent experience; its scientific value is *nil* because it comes from those who are not competent to testify. An investigation of hundreds of testimonials given for "patent medicines" has brought out certain interesting facts: A few, it has been found, are created out of thin air by the exploiters of nostrums or by advertising agencies that handle the publicity campaigns for the exploiters.

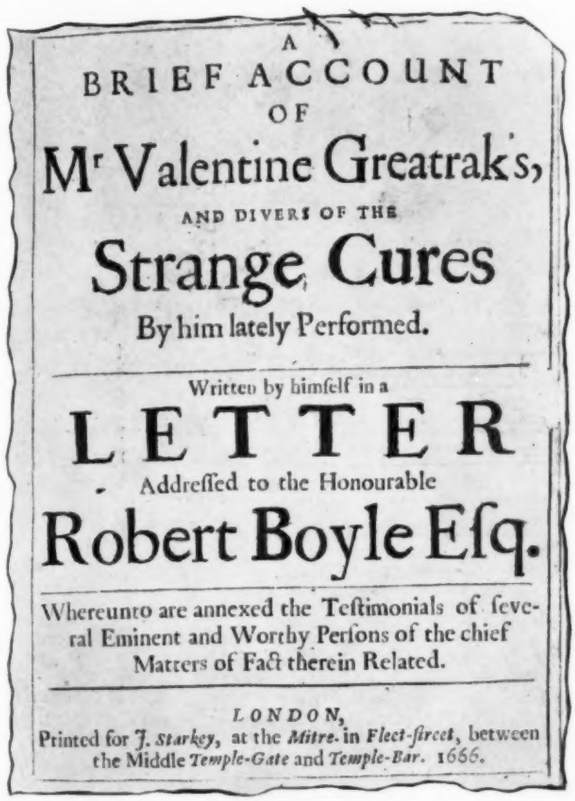
Some testimonials published three or four years ago in the interest of "Mayr's Wonderful Stomach Remedy" were of the fictional type. The Mayr concern sent out forty-two alleged testimonials to be used as forty-two separate advertisements. Each advertisement-testimonial had a heading briefly describing, in black-faced type, the case detailed below it. For instance, the piece of advertising copy for advertisement No. 25 bore the heading "——— Woman Finds Remedy Worth Fabulous Fortune"; then, in quotation marks, came the alleged testimonial, commencing: "I wouldn't take a million dollars for the good Mayr's Wonderful Remedy has done for me . . .," and leading on to highly colored details regarding the alleged marvelous results following the

use of the nostrum. The blank space left in the heading was for the newspaper publisher to put in the name of the town in which the paper was published. The instructions to the printer on the sheet of copy furnished were: "Insert name of your city in heading of each ad." When the testimonial appeared in Chicago the advertisement read: "Chicago Woman Finds Remedy Worth Fabulous Fortune"; when it appeared in Marion, Ohio: "Marion Woman Finds Remedy . . .," and when it appeared in San Francisco, it was a San Francisco woman who purported to write the testimonial.

Some testimonials are purchased; crudely for cash when the writer is frankly venal; with more finesse when coarser methods would be resented. When a cash consideration would not be tolerated it is not unusual to offer a free supply of the product or to give an order on the local photographer for a dozen photographs with the understanding that one of the photographs, together with the testimonial, shall be used as an advertising asset. But the investigation has also shown that the great bulk of "patent medicine" testimonials today are documentarily genuine and have been written in good faith.

The investigation brought out other incidental facts: It was found, for instance, that in the cases of testimonials given by sufferers from cancer or consumption it was only necessary to wait some months and documentary proof of their worthlessness could be obtained in the form of the death certificates of those who had given them. It was found, also, that testimonials for alleged cures for epilepsy (fits), hernia (rupture), and deafness could be given the lie by waiting a year or two and then asking those who had given them whether they were indeed cured. But the investigation showed, too, that testimonials for nostrums of the "cure-all" type are impervious to attack, for those who give them maintain to the end of the chapter that they have told the truth, the whole truth, and nothing but the truth.

When one remembers that no small portion of the "patent medicine" trade is in the products of the cure-all type, the advertising value of the testimonial becomes apparent. Yet the explanation is rather obvious. We are all so constituted that we are disposed to give credit to artificial agencies for results that Mother

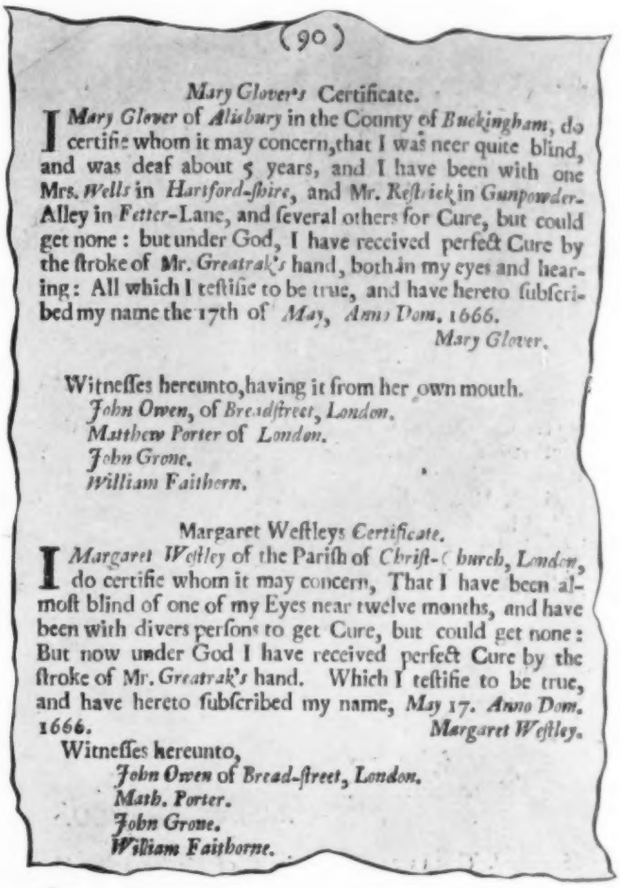


A
BRIEF ACCOUNT
OF
Mr Valentine Greatrak's,
AND DIVERS OF THE
Strange Cures
By him lately Performed.

Written by himself in a
LETTER
Addressed to the Honourable
Robert Boyle Esq.

Whereunto are annexed the Testimonials of several Eminent and Worthy Persons of the chief Matters of Fact therein Related.

LONDON,
Printed for J. Starkey, at the Mitre in Fleet-street, between the Middle Temple-Gate and Temple-Bar. 1666.



(90)

Mary Glover's Certificate.

I Mary Glover of Aliſbury in the County of Buckingham, do certifie whom it may concern, that I was neer quite blind, and was deaf about 5 years, and I have been with one Mrs. Wells in Hartford-ſhire, and Mr. Reſtwick in Gunpowder-Alley in Fetter-Lane, and ſeveral others for Cure, but could get none: but under God, I have received perfect Cure by the ſtroke of Mr. Greatrak's hand, both in my eyes and hearing: All which I teſtifie to be true, and have hereto ſubſcribed my name the 17th of May, Anno Dom. 1666.

Mary Glover.

Witneſſes hereunto, having it from her own mouth.
John Owen, of Breadſtreet, London.
Matthew Porter of London.
John Grone.
William Faithern.

Margaret Weſtleys Certificate.

I Margaret Weſtley of the Pariſh of Chriſt-Church, London, do certifie whom it may concern, That I have been almoſt blind of one of my Eyes near twelve months, and have been with divers perſons to get Cure, but could get none: But now under God I have received perfect Cure by the ſtroke of Mr. Greatrak's hand. Which I teſtifie to be true, and have hereto ſubſcribed my name, May 17. Anno Dom. 1666. Margaret Weſtley.

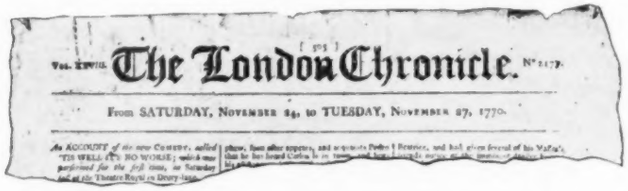
Witneſſes hereunto,
John Owen of Bread-ſtreet, London.
Math. Porter.
John Grone.
William Faithorne.

Testimonials have always been the sheet anchor of the quack. Valentine Greatrakes, born in Ireland in 1628, was a charlatan who in his day achieved national recognition. He claimed miraculous powers of curing various diseases by stroking with the hand. He was able to convince many distinguished scientists and theologians of that day of his power. Among these was Robert Boyle, the philosopher. Above is a photographic reproduction (reduced), of the title page of a book published by Greatrakes in 1666; also a reproduction of a page of the same book containing two of the hundreds of testimonials that appeared in it.

nature accomplishes. The human body has a marvelous way of repairing its own lesser faults; for generally—although not always—nature's tendency is toward cure.

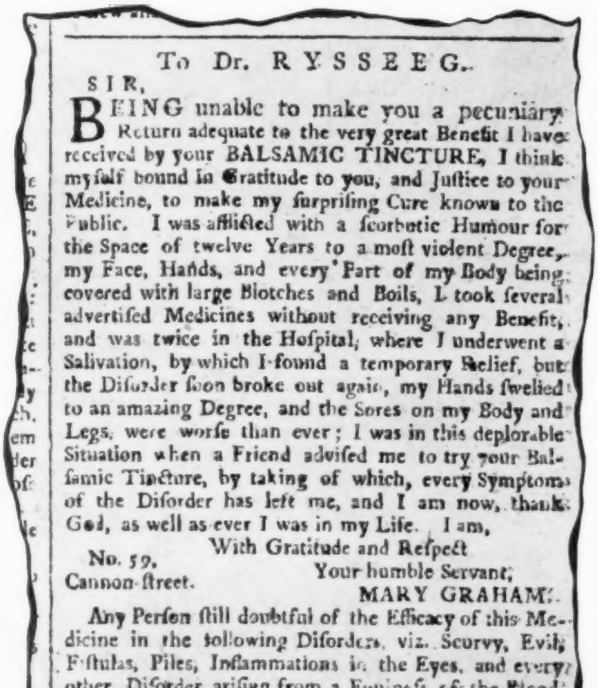
Confusing Sequence with Cause and Effect

When John Jones feels "out of sorts" there are probably eight chances out of ten that he has some passing indisposition from which he will recover in a few days, whether he does



The London Chronicle.

From SATURDAY, November 24, to TUESDAY, November 27, 1770.



To Dr. RYSSEEG.

SIR,

BEING unable to make you a pecuniary Return adequate to the very great Benefit I have received by your BALSAMIC TINCTURE, I think myself bound in Gratitude to you, and Juſtice to your Medicine, to make my ſurpriſing Cure known to the Public. I was afflicted with a ſcorbutic Humour for the Space of twelve Years to a moſt violent Degree, my Face, Hands, and every Part of my Body being covered with large Blotches and Boils, I took ſeveral advertiſed Medicines without receiving any Benefit, and was twice in the Hoſpital, where I underwent a Salivation, by which I found a temporary Relief, but the Diſorder ſoon broke out again, my Hands ſwelled to an amazing Degree, and the Sores on my Body and Legs were worſe than ever; I was in this deplorable Situation when a Friend adviſed me to try your Balſamic Tincture, by taking of which, every Symptom of the Diſorder has left me, and I am now, thank God, as well as ever I was in my Life. I am,

With Gratitude and Reſpect

No. 59, Cannon-ſtreet. Your humble Servant,

MARY GRAHAM.

Any Perſon ſtill doubtful of the Efficacy of this Medicine in the following Diſorders, viz. Scurvy, Evil, Fiſtulas, Piles, Inflammations in the Eyes, and every other Diſorder ariſing from a Foulneſs of the Blood, may be referred to many People of Credit, who have experienced its good Effects, by applying to Dr. Ryſſeeg, in New-ſtreet, near Broad-ſtreet Carnaby Market, where his Advice in theſe Caſes is given gratis.

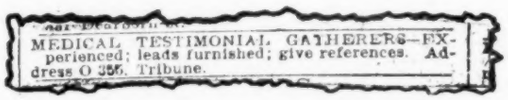
Sold Wholeſale and Retail by F. Newbery, at the Corner of St Paul's Church Yard, and may be had at the Doctor's Houſe as above, and of Mr. Blyth, at St John's Coffee Houſe, Royal Exchange, at 3s. 6d. per Bottle.

Here is a testimonial that appeared in an advertisement in the London Chronicle, November 27, 1770. Mary Graham testifies to the "very great benefit" she received from the "Balsamic Tincture" of "Dr. Rysseeg," a nostrum exploiter of that day.

something or nothing. The "healing power of nature," sometimes sonorously called *vis medicatrix naturae*, takes care of John, and in a day or two he is himself again. But during his period of indisposition Mr. Jones finds skilfully detailed in his daily paper symptoms that seem to fit his case and with these goes the assurance that "Dr. Quack's Panacea," or some other bottled marvel, is just the thing for his particular ailment. He buys a bottle of "Panacea" and, sure enough, in a few days he is well. Some months later we read:

> Mr. John Jones, of Jonesville, N. J., says: "I am glad to add my testimony in behalf of Panacea, the marvelous mixture of Dr. Quack. I suffered from a general run-down condition and feared that I might be going into consumption. I took one bottle of Panacea and in less than a week I was about my business again as usual."

And Jones is quite sincere. He was feeling sick; he took Dr. Quack's Panacea; he recovered. Therefore he believes the nostrum cured him. Jones, of course, has confused a sequence of events with cause and effect. The fallacy arises from the fact that Jones is testifying to matters outside the sphere of his knowledge. He knows he was feeling sick and he knows that after taking "Panacea" he felt better; but he does *not* know the relationship between these two facts.



MEDICAL TESTIMONIAL GATHERERS—EXperienced; leads furnished; give references. Address O 356, Tribune.

Here is reproduced a classified advertisement that appeared in a Chicago paper some time ago. It gives some insight into the methods of obtaining testimonials.

HOW TO GET A BOTTLE
OF ANY OF
Dr. Hand's Remedies Free

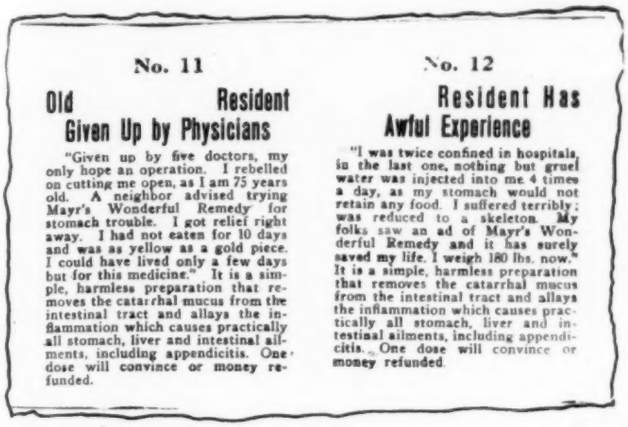
OFFER No. 1.—Any mother who, after trying any one of Dr. Hand's Remedies, and finding it satisfactory, and who will write us, giving her experience in a manner that we may use it as a testimonial, will receive from us one bottle of either of the remedies free of charge.

Some "patent medicine" makers have offered free a bottle of their nostrums to those who will write a testimonial that can be used.

The Watchmaker's Opinion of Artists' Pigments

If Jones were an experienced watchmaker, his opinion on the value of a certain brand of oil for watches might be of interest and value. But should he, a watchmaker, attempt to testify to the quality of a certain line of pigments to be used by artists, we should reject his testimony and laugh it to scorn. Yet, curiously enough, the average man is perfectly willing to accept the testimony of the butcher, the baker, or the candlestick-maker on problems that involve facts that even a lifetime of study scarcely qualifies one to pass on. It is notorious that the average individual who testifies for "patent medicines," simple, honest, and well-meaning though he may be, is usually enlisted from the ranks of the uneducated,

ignorant, and uncultured. On any other subject than that of the action of drugs on the human body we should give short shrift to his opinion; but when he says that Doc. Killem's Kidney Kure relieved him of "kidney trouble" we believe him! Yet it may take a lifetime



No. 11

Old Resident Given Up by Physicians

"Given up by five doctors, my only hope an operation. I rebelled on cutting me open, as I am 75 years old. A neighbor advised trying Mayr's Wonderful Remedy for stomach trouble. I got relief right away. I had not eaten for 10 days and was as yellow as a gold piece. I could have lived only a few days but for this medicine." It is a simple, harmless preparation that removes the catarrhal mucus from the intestinal tract and allays the inflammation which causes practically all stomach, liver and intestinal ailments, including appendicitis. One dose will convince or money refunded.

No. 12

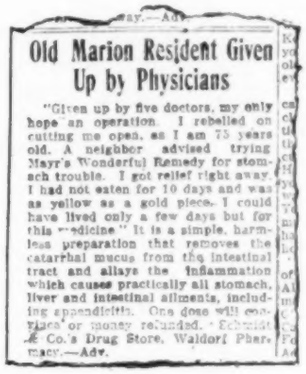
Resident Has Awful Experience

"I was twice confined in hospitals, in the last one, nothing but gruel water was injected into me 4 times a day, as my stomach would not retain any food. I suffered terribly; was reduced to a skeleton. My folks saw an ad of Mayr's Wonderful Remedy and it has surely saved my life. I weigh 180 lbs. now." It is a simple, harmless preparation that removes the catarrhal mucus from the intestinal tract and allays the inflammation which causes practically all stomach, liver and intestinal ailments, including appendicitis. One dose will convince or money refunded.

and the late Colonel Henry Watterson, the veteran editor, for that glorified cottage cheese, "Sanatogen."

Hark from the Tombs

Occasionally the "patent medicine" testimonial receives an unexpected rebuttal. Those nostrum makers who feature the local testi-



Old Marion Resident Given Up by Physicians

"Given up by five doctors, my only hope an operation. I rebelled on cutting me open, as I am 75 years old. A neighbor advised trying Mayr's Wonderful Remedy for stomach trouble. I got relief right away. I had not eaten for 10 days and was as yellow as a gold piece. I could have lived only a few days but for this medicine." It is a simple, harmless preparation that removes the catarrhal mucus from the intestinal tract and allays the inflammation which causes practically all stomach, liver and intestinal ailments, including appendicitis. One dose will convince or money refunded. Schmidt & Co.'s Drug Store, Waldorf Pharmacy.—Adv.

AUSTIN RESIDENT HAS AWFUL EXPERIENCE

"I was twice confined in hospitals in the last one nothing but gruel water was injected into me 4 times a day, as my stomach would not retain any food. I suffered terribly; was reduced to a skeleton. My folks saw an ad of Mayr's Wonderful Remedy and it has surely saved my life. I weigh 180 lbs. now." It is a simple, harmless preparation that removes the catarrhal mucus from the intestinal tract and allays the inflammation which causes practically all stomach, liver and intestinal ailments, including appendicitis. One dose will convince or money refunded. Haugan's Pharmacy. Advertisement.

Here are examples of made-to-order testimonials. On the left are two pieces of advertising copy furnished newspapers by the exploiter of "Mayr's Wonderful Stomach Remedy." The instruction to the newspapers was: "Insert name of your city in heading of each ad." On the right are, respectively, advertisement No. 11 as it appeared in the Marion (Ohio) Daily Star and advertisement No. 12 as it appeared in the Austin (Minnesota) Daily Herald. When these same advertisements appeared in other cities the testimonials were credited to the inhabitants of the city in which they appeared.

study of drug action for the scientist to be able to state with any degree of assurance that a given drug has been responsible for a given result. For there are few things in the range of human knowledge whose complexity approaches that of the study of the human body and its processes in health and disease.

The Passing of the Testimonial Habit

But the "patent medicine" testimonial giver is not always of the uneducated and ignorant type. There was a time during the last twenty years when public opinion tolerated the testimonial from celebrities of various kinds. The congressman, actor, preacher, and writer who gave a testimonial for some widely vaunted nostrum did not, apparently, suffer in reputation, except in the eyes of the discriminating few. Today we see few testimonials for "patent medicines" from men and women in these classes. Some such names appear in behalf of the alleged virtues of a tooth paste, toilet cream, or equally innocuous article, but even in this field the testimonial from the intelligent classes is comparatively rare. It simply isn't done.

It is only within the last decade or so that the testimonial habit—for nostrums, at least—has become passé. Looking through the old files of newspapers we find Julia Marlowe's praise of "Peruna"; Sarah Bernhardt's boost for "Paine's Celery Compound"; and Schumann-Heink's solicitude for "Peter Fahrney's Blood Vitalizer." More recently we find the puff of Harrison Fisher, the illustrator,

monial assume a risk that the commoner form of "patent medicine" advertising does not carry. In spite of the greatest care, occasionally the testimonial of John Doe, describing his use of some "kidney cure" with

How Nuxated Iron Helped Me To Whip Frank Moran

Jess Willard Tells Secret of His Easy Victory. Also reveals hitherto unheld secret of his great triumph over Jack Johnson; says

IRON IS GREATEST OF ALL STRENGTH BUILDERS

Ordinary Nuxated Iron will often increase the strength and endurance of athletes, nervous folks 200 per cent. in two weeks' time.

How Nuxated Iron Helped Me to Whip Jess Willard

Put Me In Such Superb Condition As To Enable And Win The World's Championship

JACK DEMPSEY "TIGER OF THE RING"

Tells a Secret of His Training—Recommends Nuxated Iron To Every Man and Woman Who Wants To Build Greater Strength, Energy and Power

Two testimonials, published at different times, describing the marvelous effects of "Nuxated Iron." Jess Willard took "Nuxated Iron" and whipped Frank Moran. Jack Dempsey took "Nuxated Iron" and whipped Jess Willard. What would have happened if Dempsey and Willard had both been taking "Nuxated Iron" at the same time?

subsequent recovery from "kidney trouble," inadvertently appears in the same issue of the local newspaper that carries John's death notice mentioning the fact that Mr. Doe had

succumbed to Bright's disease. Not a few cases of this character are on record.

A type of testimonial still used sparingly but not so common today as it was ten years ago is that purporting to be the editorial expression of a magazine of more or less imposing title. These magazines are not *bona fide* publications but are issued at irregular intervals when some "patent medicine" maker is willing to pay for an issue in which the "editorial" puffing his product appears. Among these parasites of quackery may be mentioned the *New York Health Journal,* which got out a number whenever a quack or "patent medicine" concern would pay for its editorial space. The *United States Health Reports* and the *United States Health Bulletin,* both published in New York City, were similar sheets and had

CHAS. T. CLICK.
Westerville, O.
In July, 1908, I was given up by my family physician, and with good reason, too, as I was "all in," not being able to walk over 15 feet. I had gone all to pieces, just the same as I've seen many other consumptives. In a short time after starting on Nature's Creation, which was July 24th, I was able to be about as usual and have gained right along ever since. I have gained about forty pounds and am feeling better and better. I can't say too much for Nature's Creation, particularly as I know of many cases which are even more remarkable than mine.
Very truly,
Chas. T. Click
Mr. Click's recovery is the talk of the town—most everyone knows him, and wherever he goes he is met with—"Hello, Charley!" Who would ever have thought it possible—we all thought you were a 'goner' sure." He is now working every day at his trade of paperhanging.
(From Columbus Citizen, May 7, 1909.)
LEROY SPARR.
Stag Hotel, Dayton, O.
June 22, 1909
Two years ago I was ordered West by my physicians, as my lungs were affected and they could do nothing for me. I went to Colorado and tried different treatments, but was of no avail. I was loosing rapidly and could scarcely walk across the room without getting out of breath when I started taking Nature's Creation. I can now walk all day without any trouble. Five bottles was sufficient to bring me home. In the name of humanity, I advise sufferers to stay at home and take Nature's Creation and if already away to send for the medicine and be restored to health and friends.
Very truly,
Leroy Sparr
(From Ohio State Journal, June 24, '09.)
MRS. GEO. S. HEWITT.
1215 Center Street,
Portsmouth, O
What Nature's Creation has done for me is truly miraculous. Before taking, upon the advice of my physician, I started West, but en route became so low that we gave up all hopes and returned home. I soon began taking Nature's Creation and it has made a new woman of me, the same as many other cases that I know of.
Knowing what it has done for me, I say without hesitancy that as long as there is life there is hope, and trust that this statement will save many other unfortunates.
Respectfully,
Mrs. Geo. S. Hewitt
(From Press-Post, April 28, 1909.)
HERBERT S. IMMEL.
Columbus, O.,
April 13, 1909.
To Whom It May Concern:
The public knows all about my having been saved by Nature's Creation. Since my recovery hundreds have come to me to get the details of my amazing recovery. Among them have been many consumptives themselves who have since taken the treatment and are today enjoying perfect health. What a blessing it would be if every one but know that Nature's Creation really cures.
Very truly,
Herbert S. Immel
219 Deshler Avenue.
MRS. F. P. MARTIN.
St. Augustine, Fla.,
June 1, 1909.
The Nature's Creation Co.,
Gentlemen—We think your remedy wonderful and have told dozens of people about it and given them your address. My daughter now seems as well as ever and weighs 12 pounds more than when she commenced taking Nature's Creation. She was married last month. I am sending you her picture, but don't know as it will be of any use to you, as she has always been thin in the face. We thank you kindly for courteous treatment and will always recommend you highly.
Your grateful friend,
Mrs. A. T. Sutton
69 St. George Street.
(Chas. O. Hatch, the well-known Plumber of Jamestown, O., is this girl's uncle, and to him goes the credit of saving her life, as it was he who got the medicine for her when she was practically confined to her bed.)
DIED, DEC. 23,1909
DIED, APRIL 2,1910
DIED, OCT.19,1910.
DIED, DEC.3, 1910.
DIED, MARCH 17,1911.

Here are five testimonials used by the exploiter of a "consumption cure." Below each testimonial we have added the date of the death of the person giving it. Every one died of consumption. We have scores of just such testimonials in the files and as many death certificates of the persons who gave them.

evidently been named so as to make the public believe that the United States government had something to do with their publication. The *Mercantile and Financial Times,* also published in New York, has been exposed more than once as a sheet whose "editorial" pages have been used for the purpose of puffing medical and quasi-medical fakes.

Then there are individuals who may be termed professional testimonial givers. Usually such persons pose as "chemists" or "analysts." One of the most notorious in this line in the United States is W. H. Morse, who has given "analytical reports" for such products as "Duffy's Malt Whiskey," "Towns' Epilepsy Cure," "Wine of Cardui," "Absorbine, Jr.," the "Ideal Sight Restorer," the "Oxydonor," and for consumption cures, rheumatism cures, and many other medical fakes. On the other side of the Atlantic, one J. C. Mascarenhas, who carries the mystic letters "F. C. S., K. S. B., & c." after his name and calls himself an "Analytical and Consulting Chemist and Assayer," issues testimonials in the form of analytical reports. These are utterly worthless from a scientific standpoint, but for advertising purposes are doubtless worth the guinea ($5.00) that he charges the quacks who wish to use them. His "reports" have been featured by the exploiters of such American humbugs as "Sargol" and "Alcola."

In bringing this chapter to a close, no better opinion on the valuelessness of medical testimonials can be given than that of the attorney general to the postmaster general. It comes from a man who had had a peculiarly rich experience in investigating and putting out of business medical frauds. He said:

"Speaking generally, it may be said that in all my experience in this office never has a medical concern, no matter how fraudulent its methods or worthless its treatment, been unable to produce an almost unlimited number of these so-called testimonial letters."

[The fourth article of this series, to appear in HYGEIA for July, will show the part played by secrecy in the "patent medicine" business.]

Scientific Nutrition and Public Health

II. Why We Have a Problem of Nutrition in a Land of Plenty

E. V. McCOLLUM

EMPHASIS was laid in the first article of this series on the fact that the human instinct as a guide to appetite does not enable us to make a selection of foods that are the best for our nutrition. Neither will a variety of foodstuffs insure that the diet will prove even reasonably satisfactory. Both of these propositions will be disputed by many, but in the course of these articles it will be shown that they are both sound, and apply to the problems of human nutrition in an important way. It is certain that there are now sufficient experimental data to demonstrate that a chemist with knowledge of foods and of the physiologic needs of the body is better able to plan a diet for the benefit of health than is a pig, a rat, or a child or man guided by his sense of taste.

Dr. McCollum answers the question in his title of this the second of the papers in his series on nutrition by stating that the average American eats too little of some foods and too much of others, beneficial though both may be. Feeding experiments on animals and work in agricultural experiment stations and colleges have proved the correctness of this statement. In the next article Dr. McCollum will tell why Americans are making more serious mistakes than did their forefathers in the selection of food.

Foods for Building and Repairing Tissues in the Body

A few years ago it was customary to compare the human body to an engine, and the food to the fuel which is consumed in making the engine go. The figure is of limited usefulness for illustrating the processes of nutrition. It is much more appropriate in the light of our present knowledge to liken the nutrition of the body to some complex process of manufacture in which chemicals are used. Every one will appreciate how important it would be in such a case to have everything just right, the right chemicals in the right proportions, and added in the proper order. In the nutrition of the body we are building tissues or repairing them, and we must have just the right kinds of materials for these processes, or we shall not succeed. All the researches on foods and nutrition during the last fifteen years have confirmed the truth of this proposition.

In the agricultural experiment stations, established in the United States more than half a century ago, numerous experiments have been constantly in progress in order that the best methods of feeding farm animals for profit may be learned. Feeding animals for profit means that they must be born in a state of nutrition, obtained through the mother, such that they may begin their independent existence with a fund of vitality which insures growth and normal functions, provided the conditions of living are reasonably favorable. Success in animal production also depends on making the young animals grow just as fast as they are capable of growing. It is now proved that it is not possible for animals to grow too fast, and that the faster the rate of growth in the young the greater will be their vigor when growth is completed. This statement refers to the symmetrical development of all the tissues. Increase in weight from excessive fattening or edema is not the same as normal growth.

Superiority of Certain Combinations of Foodstuffs

The experience of animal husbandrymen long ago demonstrated that farm animals do not do equally well on all kinds of feed. About 1900 was begun the study of what was then spoken of as "the specific effects of nutrients" in animal feeding. This meant that experience had shown that certain kinds of foods produced better growth in young animals, led to greater flow of milk in cows, put a finer gloss on the coats of horses and made the horses full of vigor and energy, and better fitted sheep for the show ring than did certain other kinds of foods which appeared, so far as could be determined by chemical analysis, to be essentially of the same composition. It was not possible at that time to give any reason why better results were secured with certain systems of feeding than with others, but the results left no room for doubt about the fact. Experiment station workers began therefore to study the effects on growth of feeding, for example, corn supplemented by one other food produced on the farm, and corn supplemented by still another food equally available, and of about the same market value. The results showed clearly that certain combinations of foodstuffs are far more nutritious than others. It became customary therefore for colleges of agriculture

and the experiment stations to distribute bulletins to the farmers containing data about actual experiments with various rations. Farmers were advised to feed their animals certain foods mixed in definite proportions, for it was established beyond question that often better results could be secured with certain proportions of the two or three foods that made up

A well nourished rat; the eyes are bright, the coat sleek, and there are no sores on the ears, nose, or tail.

a ration than with any other proportions. The reason for this was not then clear, but we now are able to interpret the cause of the superiority or inferiority of one combination of foods over another. Some famous experiments with the "cafeteria" system of pig feeding were conducted at the Iowa Experiment Station. The several diets on which hogs were found to grow best were made up of three or more fairly palatable ingredients of which the hogs could eat rather liberally without harm. It was found that a pig cannot select a satisfactory ration from a series of bins containing corn, wheat, oats, barley, rye, peas, flaxseed meal, bran, wheat middlings, and other grains and grain products. Incredible as this may seem, it is accepted now as a fact by all experienced feeders who have followed the interpretations of the numerous laboratory experiments in nutrition during the last decade. The reason why these foods do not supply a satisfactory diet is now well understood.

In the earliest studies on nutrition, which were made about seventy-five years ago in Germany, only rations were fed which were known to be reasonably successful in practice. In fact, it was the tendency for animal husbandrymen who experimented in this field to want all their animals to look well fed; this prevented great progress in research. It is essential, if anything is to be learned, that some diets which are studied shall be faulty and shall lead to stunting. When it is learned why these are not satisfactory a new and valuable truth is discovered.

Chemical Analyses of Foods

The chemists who carried out these early experiments tried to determine by analysis the composition of the foods used. They found that if they determined the total amounts of sugar-yielding substances, such as starches, cellulose, and pentosans; the proteins, which are substances similar to casein of cottage cheese, egg white, and so forth; the fats; and the ash, the mineral elements contained in the foods, they could account for practically all of the material analyzed. The assumption seemed warranted therefore that these represented the nutrient principles contained in the foods. It was not until 1906 that Professor Hopkins of Cambridge University, England, undertook to test by experiment whether or not a mixture of pure proteins, pure carbohydrates, pure fats, and a mixture of mineral salts simulating in its composition that of the ash of certain natural foods, would provide animals with everything necessary for satisfactory nutrition. Every component of Dr. Hopkins' food mixture could be named, and its properties were known. A chemist analyzing the mixture could not have found anything wrong with it. Any physiologist, physician, or chemist would have asserted that of course such a diet would prove adequate. Experimental trial proved, however, that the rats restricted to it died about as soon as they would have if they had been deprived of food. So remarkable a result naturally aroused the interest of other investigators, and before long efforts were being made to discover what was lacking from

This rat was fed on a mixture of cooked, dried steak, 10 per cent.; dried beets, 5 per cent.; dried turnips, 5 per cent.; dried potatoes, 30 per cent.; dried navy beans, 10 per cent.; dried peas, 10 per cent.; wheat flour, 20 per cent.; and cornmeal, 10 per cent. —without any milk or leafy vegetables. Despite the wide variety in the diet, poor nutrition was the result of this type of foodstuffs.

the list of substances which had long been assumed to be the essential nutrient principles, but which were now known to be incomplete.

Varying Values of Proteins

The first advance to be made in the modern study of nutrition was the discovery that the proteins of our common foodstuffs are not all of equal value. Some, like gelatin, zein, the principal protein of maize, and lactalbumin of milk, are individually incomplete in their make-up, so that any one of them fed as the sole source of protein in the diet cannot provide all the protein digestion products indispensable to the maintenance of life or growth. Other proteins are of good quality: those of egg yolk, the mixture of proteins in milk, and the proteins of whole wheat, for example, since they are constituted like the proteins which form the principal organic basis of the structure of the muscles and organs. Most other proteins fall between these extremes in values.

Vitamins Necessary to Health

Next it was discovered that certain substances now designated as vitamins are indispensable for the maintenance of health, and even of life. Much effort has been expended on trying to determine how many vitamins there are. At present there is indisputable evidence that there are at least four which are necessary in the nutrition of most mammals, including man.

Nutrition Dependent on Proportions of Foods

Another discovery of capital importance in nutrition was that the animal body is far more sensitive than had been believed to the amounts and proportions of the several mineral elements in the diet. More will be said about this phase of the subject when rickets is discussed, and of a peculiar disease of the eye which can be caused by excessive amounts of certain salts in the diet.

Supplementary Values of Foods for One Another

The outcome of a decade's intensive study by a number of investigators has shown that for practical purposes and for scientific progress it is well to supplement the data procured by chemical analysis by data secured by what is known as the "biologic method of analysis." This method consists of the systematic study of a single natural food, such as a cereal grain. In a series of feeding experiments the food substance, itself inadequate for the support of growth, is supplemented by single or multiple purified food principles, and the experiments are continued until it is found just what nutrient principles are necessary to make it complete from the dietary standpoint. Such data suffice for all time, since one sample of a natural food is essentially the same as another sample of the same food. In the course of time therefore sufficient knowledge accumulates to enable one to predict the extent to which one food will supplement another, with respect to quality of its proteins, vitamins, and inorganic elements. We now possess much data of this kind concerning most of our important foodstuffs.

Deficiencies of Average American Diet

The diet of the average American deserves consideration in the light of all the knowledge of foods gained through animal experiments by the biologic method of food analysis. The staple articles on the American table are white bread, meat in the form of beefsteak, mutton, ham, roast, and other cuts from the muscles of animals, potatoes, and sugar. Supplemental foods are milk, eggs, and various fruits and vegetables. Of the staples every one eats liberally every day. Of the supplemental foods many eat but little and irregularly, and a few scarcely any. Milk and such vegetables as cabbage, spinach, kale, and

This rat was fed the same diet as his poorly nourished neighbor, except that some of the potatoes, peas, and beans were left out, and 10 per cent. of whole milk powder was added. The difference which the whole milk powder made is evident. These rats were of the same sex, they had been given their respective diets for the same number of days when the photographs were taken, and they were the same distance from the camera.

lettuce, of which we eat the leaves, are far superior in improving the dietary qualities of the cereal grains, potatoes, and other tubers or roots to any other foods we have. A young rat or a farm pig fed wheat, oats, corn, rye, potato, various meats, and sugar will never amount to anything, and will always be a runt with stiff joints, bad teeth, rough skin, thin hair, and generally miserable appearance. Pigs of the same litters fed the same grains, tubers, meats, and sugars, supplemented with suitable amounts of milk or leafy vegetables—and the amounts must be liberal—grow into thrifty animals of fine appearance, good skeleton, and sound teeth. Indeed, experience has shown that there are but two successful methods of growing swine

in America. One is to feed the animals grain while they are running on a good pasture of alfalfa or clover or other green forage crop; the other is to feed the animals grain and an abundance of skim milk. Any one who has observed the methods of unsuccessful farmers who try to keep pigs in a lot and confine them to a cereal diet knows how many animals have "black teeth." These are teeth without enamel; they are formed in this faulty manner because of the poor nutrition of the pigs during growth.

"Protective Foods"

It occurred to me several years ago that the typical diet for man in America is one on which no species of animal can be reared successfully. A diet of white bread, meat, potato, and sugar always produces inferior farm or laboratory animals. The difference between complete failure which would be inevitable for a person confined rigidly to this list of foods, which make so large a part of the daily fare of most Americans, and the physical inferiority of the school children of the present, is the result of including in most diets small amounts of such foods as milk, cheese, eggs, cabbage, spinach, cauliflower, Brussels sprouts, collards, turnip greens, lettuce, beet top greens, and a few other green vegetables, of which the leaves are eaten. These foods play a special rôle in correcting the deficiencies of the white bread, meat, potato and sugar type of diet. Consequently I suggested in 1918 that they be designated "protective foods." What we need more than anything else just now is a greater consumption of the protective foods.

[The third paper in this series will appear in Hygeia for July.]

First Aid to Medical Terms

WATSON DAVIS

THE greatest possible honor that can come to a physician, it has been said, is to have his name associated with some loathsome disease. While most physicians have little opportunity for seeking out and attaching their names to an unrecognized malady of mankind, occasionally, even today, there comes into the medical vernacular a new name as a monument to the discoverer.

Some diseases are named from the Latin and Greek terms of physiology and anatomy; others are christened with the names of the men who first discussed or accurately described them. Mr. Davis sketches the history of a few of the latter in this installment of his "first aid."

Pleasant verbal recognitions of medical workers do exist. Tests and treatments sometimes are called from the name of their originator or improver. While it may be natural to look on the one who cures with more praise than on him who discovers the need for remedy, it must be remembered the trouble must be known before it can be ameliorated.

Often it is a relatively minor achievement that carries the fame of an investigator through generations, so that they use his name without knowing that they do. Some of us can sympathize with the eighth grader who was sure that milk was called "pasteurized" because the cows which produced it had the superior opportunity of living and feasting in pastures. Yet what more fitting memorial to the great bacteriologist could there be than milk made safe for millions of children?

Richard Bright, one of the "great men of Guy's," that is Guy's Hospital, London, during the first fifty years of the last century, is famous today, beyond his just due perhaps, because his last name is associated with a disease that is relatively common. Before the days of Bright, medical men did not realize that the kidneys as well as the heart can cause dropsy, which, since its Greek ancestor was water, means a swelling or an unnatural accumulation of watery fluid in the body. When Bright distinguished between cardiac (from the Latin for heart) dropsy and renal (from the Latin for kidney) dropsy, he won an immediate reputation to enjoy during his lifetime, and the condition has been known as Bright's disease ever since. In medical literature the term nephritis derived from the Greek word for kidney is sometimes used, although the possessive name is much more common, popularly and medically.

One might think that to name a disease after a person would be much simpler than making one up from ancient languages, yet one condition of the thyroid (Greek meaning shield shaped) gland has been called by four proper and three synthetic names. A Dublin physician, Robert James Graves, published in 1835 a description of exophthalmic goiter so admir-

able that the disease still goes by his name. In point of priority, however, it seems that it should be Parry's disease, as in 1786 Cabel Hillier Parry wrote an account of this disease. The Germans prefer to call this trouble after one of their countrymen, Basedow, who wrote a description in 1840, and the Italians claim that this disease should memorialize one of their race who described it in 1800. The most common synthetic name, exophthalmic goiter, means a swelling of the neck at the throat (goiter comes from the Latin for throat) accompanied by a sticking out of the eyes (exophthalmos). But unusually prominent eyes are not always a symptom, and for this reason some do not like this name.

If one has occasion to use the name of Dr. Percival Pott (1714-1788), one must be careful because Pott's name is associated with two medical troubles, one of which he described and the other of which he experienced. While walking down the street one day he fell and fractured the outer bone of his leg, the fibula, so-called because this Latin name means clasp. And this particular fracture has ever since been called Pott's. While Pott was in bed recovering he began writing descriptions of diseases, and among them was Pott's disease, or tuberculosis of the spine, the cause of hunchback.

Medical research workers of recent years have also contributed their names to medical terminology. Riggs' disease, although it was first described in the eighteenth century, is named for the American dentist who in 1876 introduced the modern heroic treatment of scraping the teeth to the roots. Its scientific name is pyorrhea alveolaris, which, when translated, is pus-running jaw. As late as 1910 a fever appeared in New York that was named after Nathan E. Brill who discovered it, but now it is recognized that Brill's disease is a mild form of typhus.

It was not known that the throat and middle ear are connected by the eustachian tube until Eustachius, a sixteenth century Italian physician, discovered the fact, and even a hundred years ago there were still fresh fields for the ambitious anatomist to explore. All of the important parts of the human body had not yet been revealed through the labors of the dissecting room, and as a result we carry around with us bones, muscles, and nerves known by the names of those who first found or described them.

Many types of operations, tests, and technics bear evidence of some person connected with them. Cesarean section is so-called because it is reported that Julius Caesar was brought into the world by such an operation. The Schick, Wassermann, and Widal tests, so important today, are all named for the men who devised them. And there are many more tests, reactions, variations of diseases, syndromes, and symptoms named for those who studied, devised, or described them.

It is indeed proper for worthy medical men to be remembered in medical literature in this way. If a layman afflicted by some new malady becomes jealous of its christening, let him remember that it takes a Julius Caesar to have his name commemorated medically.

MAN'S REDEMPTION OF MAN

To man there has been published a triple gospel—of his soul, of his goods, of his body. Growing with his growth, preached and professed in a hundred different ways in various ages of the world, these gospels represent the unceasing purpose of his widening thoughts.

But the third and greatest glory is that the leaves of the tree of science have availed for the healing of the nations. Measure as we may the progress of the world—intellectually in the growth and spread of education, materially in the application to life of all mechanical appliances, and morally in a higher standard of ethics between nation and nation, and between individuals there is no one measure which can compare with the decrease of disease and suffering in man, woman and child. The psalmist will have it that no man may redeem his brother, but this redemption of his body has been bought at a price of the lives of those who have sought out nature's processes by studying and experiment. Silent workers, often unknown and neglected by their generation, these men have kept alive the fires on the altars of science, and have so opened the doors of knowledge that we now know the laws of health and disease.

WILLIAM OSLER.

Plain Facts About Health and Disease

HEALTH NEWS OF THE MONTH

Adrenalin as a Life Saver

Newspapers, during the last month, have contained many items relative to the restoration of life by injections into the heart of adrenalin. Adrenalin is a substance which was separated from the adrenal glands by Abel, an American, and Takamine, a Japanese, in 1901. The adrenal glands are two structures which lie, one each, above the kidneys on either side and in front of the spinal column a little above the height of the waist. When the extract of these glands is injected into the body it causes contraction of what is known as involuntary muscular tissue, such as that which occurs in the walls of blood vessels and in the heart; a marked rise in the blood pressure follows. About 1904 several German investigators first attempted to cause a heart which had stopped beating to begin again through the injection of this extract directly into the heart. It was found that such injections produced a rapid contraction of the muscles lining the cavities of the heart, and that in several instances persons who were on the border between life and death were restored temporarily to life. However, when death was due to some change in the body tissues, ordinarily not recoverable, the effect was only temporary and not successful; the patients usually died within eight to ten hours or within a week after the injection. However, in other cases in which the death was due to so-called shock, as a result of some sudden effect on the nervous system, brought about by a poison or a physical action, the injection of the drug caused the heart to beat again and patients were restored for longer periods.

A most interesting case occurred in the practice of a surgeon in the clinic at Erlangen, Germany. He was operating on a pregnant woman for the removal of the unborn child which was developing outside the uterus and in the tube which leads from the ovary to the uterus. During the operation the woman suddenly collapsed. Attempts to revive her by all the ordinary methods, including stimulating drugs into the veins, forced breathing, and even direct massage of the heart through the operation wound failed. Six minutes after the heart had ceased to beat an injection of adrenalin was made directly into the heart cavity. Within ten seconds a muscular contraction occurred; within two minutes the pupils of the eye, which had become dilated, contracted, and in eleven minutes the woman breathed spontaneously. Four weeks later she was discharged from the hospital as well.

The most recent incident reported occurred in the practice of Dr. Carl Bodon, attendant physician to the American Legation in Budapest. He returned home one day to find that a man fifty-six years old, who roomed in the same building, had suffered a heart attack and was practically dead. He lay unconscious with his head thrown back, the eyes open, the pupils dilated and unseeing. There was no perceptible action of the heart, nor any visible breathing. Mucus had collected in the mouth and throat. The drug was given directly into the heart with prompt effect. Within two hours and a half the patient was able to walk, assisted, to his bed, and four months after was reported to be in his usual state of health. It is not wise, however, to consider such sensational reports a standard of what may be accomplished generally.

The conditions in which this method may be used are few. It will not save life when collapse has been due to a long process of degeneration. Furthermore, its temporary restorative power may, on occasion, be more cruel than beneficial. It is, after all, a matter of definition. The procedure is not life restoring; it is life saving. When that intangible thing known as the spirit has departed, there is no drug which will cause its return.

The Progress of Ethylene

The use of ethylene, a new gas anesthetic described in the last issue of HYGEIA, has now been extended to more than a hundred persons undergoing operation, and with results so satisfactory as to convince physicians that real progress has been made. In one instance a patient was subjected to the anesthetic for an hour and fifty minutes and recovered promptly from its effects without nausea. Physicians who have administered the anesthetic have noticed that the blood of the patient is of a different color than the

blood of the patient under ordinary anesthetics, such as ether or nitrous oxide ("gas"). With these anesthetics many patients become somewhat blue, due to the absence of oxygen, whereas with ethylene, which is combined with oxygen for administration, the blood has a fresh, living color. The anesthetic apparently failed in its special virtues in two patients who appeared to be refractory to it. In these patients, the complete relaxation which the surgeon desires did not develop even when large doses were given. Investigation showed that this may have been due to a fault in the apparatus which permitted the passage of air into the tubes through which the anesthetic was given. Other investigations are being made to determine whether the fault was of this character or due to some factor inherent in the constitution of the patients concerned.

New Treatment for Paresis

Paresis, the disease known as general paralysis or softening of the brain, has always been considered by physicians to be a progressively fatal disease. Few patients who suffer from this disease recover. The mind is affected, and during a long period of years the symptoms increase in their intensity. When the drug known as arsphenamine (salvarsan, "606") was discovered to have special virtues in the treatment of syphilis, and when it was known that general paralysis was due to the effects of syphilitic disease, it was hoped that some advance might be made in controlling the progress of paresis. Thus far attempts have not resulted in any striking recoveries, although in some instances highly beneficial effects have been reported. This state of affairs has caused medical investigators to continue their attempts to find a method of controlling the progress of paresis. During the last few years certain German investigators, basing their efforts on the knowledge that certain types of bacteria cannot live in the presence of others, just as certain human beings find it difficult to live with other species of animals, have attempted to reach the cause of paresis by injecting into patients with paresis the blood of patients with malaria. While the results have not been conclusive, the method has been carried out on a large number of patients and in a considerable number of instances with sufficient success to warrant the belief that it may have virtue. It is interesting to learn the process by which the investigators arrived at their decision to use this method. They had observed that patients with paresis tended to improve when they became ill with malaria. It has long been known that malaria may be controlled by the proper administration of quinine. It was therefore decided by the European investigators to inject blood infected with organisms of malaria into the patients, and then, after they had been subjected for a certain time to the malaria, to cure them of the latter disease with quinine. As has been said, the results in many instances were strikingly effective, and the method has now been extended to certain institutions in this country where it is being studied under controlled conditions. No doubt within the next few years its real value will become apparent.

The Futility of "Dance Marathons"

Within the last month the newspaper reading public has been regaled with accounts of so-called "dance marathons," which have been conducted principally in eastern cities. This peculiar form of dissipation appears, however, to tend toward becoming epidemic. Endemic and sporadic outbreaks, notably in Detroit and Cleveland, indicate a disposition to follow the same path as did the great epidemic of influenza several years ago, which arose in the east and spread westward across the United States. The symptoms of the disease are a sudden loss of mentality with a resulting lack of inhibition of the nerves controlling the pedal extremities, which thereupon begin to move upward and downward, backward and forward until the individual is unable, through sheer lack of physical energy, to continue the motions. The disease occurs in pairs, male and female. Its etiology is apparently a solo of the clinking together of the shekels constituting the monetary consideration, accompanied by the strains of a perverted orchestral din. The results of the disease physically appear to be a loss of leather from the shoes on the patients' feet; the results mentally are nil, for where nothing has existed nothing can develop. Unfortunately, there have been no postmortem examinations. The only evil effect of the disease has been the amount of space utilized in presumably sound journals and newspapers in reproducing accounts of the distance covered and the witless countenances of the performers. To call such competitions by the term "marathon" is to discredit even that somewhat futile form of athletic endeavor. The marathon race is a contest in which trained athletes pit their physical strength and their skill over a measured course. The

experienced runner is able to defeat a contestant of perhaps equal physical ability through a proper utilization of his knowledge of the game. In the so-called "dance marathon," two misguided persons merely shuffle about, holding on to each other until physically incapable of continuing. It is not athletics; it is not sport; it is not dancing; it is not a pleasing exhibition; it is the apotheosis of futility. M. F.

VACATION TYPHOID FEVER

A WORD of caution concerning the possibility of contracting typhoid fever while on a vacation seems in place at this time. Many dwellers in cities spend days or weeks during the summer in the country, where they are ready to accept, apparently without question, the water of any locality. It follows that the death rate from this disease rises, even in cities supplied with the purest water, on the return of vacationists who have been recuperating at the seashore, in the mountains, in villages, and on farms. A certain number of secondary cases, due to contact with patients who acquired the infection outside the city, develop in the city.

Since 1914 it has been customary in Detroit for the health officer to visit every patient reported to have typhoid fever, in order to ascertain, so far as possible, the source of the disease. From what definite information could be obtained, it was learned that the most common cause of typhoid fever in Detroit is infection contracted outside the city; this amounts to about 30 per cent. Infection from drinking and bathing in polluted river water causes about 10 per cent. Infection from contact with patients with typhoid fever accounts for 8 per cent. Prior to 1918, infection contracted from drinking water on the boats traveling the Great Lakes accounted for 4.7 per cent. of all cases, but improvement in the water supply on these boats has led to the practical suppression of this cause of the disease.

It is well to bear in mind the fact that typhoid fever may result not only from drinking infected water, but also from bathing in it. Cases have been known in which the disease was contracted from the use of infected water for brushing the teeth. In 1921, the total number of cases of typhoid fever in Detroit was 1,162, of which 416 (35.8 per cent.) were contracted outside of the city. In New York, the increase in the incidence of typhoid fever in the autumn is in part due to infections acquired by her inhabitants during vacations in the country.

The small town or growing city which is in the transit stage between private well water and the public pipe supply has a difficult problem to solve. Many citizens are reluctant to abandon the cold, clear, sparkling well water from the old wooden bucket. Often the water in these wells is badly polluted from the cesspool or privy.

Drinking water is not the only source of typhoid fever in rural districts. Milk in villages and even on the farms visited by the city residents on their vacations may be the bearer of the typhoid bacillus. Milk which is excluded from the market in the city is often sold in villages without being submitted to any examination. In cities of less than 10,000 inhabitants, milk is rarely pasteurized. In village hotels, flies are not always excluded from the dining rooms.

Vacation typhoid fever is a real danger. To those who seek rest and recreation in country places within the next few months, we may say that when there is any doubt about the water and milk, insist that they be boiled before being served. Wherever you may be, insist that you will not share your food with flies. Following this advice may save weeks of severe illness. V. C. V.

POISONING FROM SPRAYED FRUITS AND VEGETABLES

IT IS now more than sixty years since some form of arsenic was first used by agriculturists to destroy pests on plants. It was applied to the potato plant to check the ravages of the Colorado beetle, but it did not attain much popularity until 1887, when it was used against the codling moth, the chief cause of wormy apples. The use of lead salts and copper salts came later. Today there is scarcely a fruit or vegetable produced on a commercial scale which does not profit by the application of insecticides or fungicides. In fact, it has become practically impossible to produce fruit in large quantities without the use of sprays. The toxic constituents of most modern spraying materials consist of salts of arsenic, copper, and lead, although compounds of the alkaloidal poisons, such as nicotine, and some other vegetable poisons, such as hellebore, are employed to some extent. Since the first use of insecticides the possibility of poisoning the consumer has been under consideration by those interested in public health. Numerous investigations have been undertaken in order to determine whether

or not fruits and wines from plants which have been sprayed contain sufficient arsenic or lead to be a menace to public health. In general, the findings have shown that, although such products contain small amounts of arsenic or lead, the quantities of toxic substances are so small that ill effects from the consumption of such products in customary quantities need not be expected. The United States Department of Agriculture has recently completed an exhaustive investigation of this subject (*U. S. Department of Agriculture Bulletin 1027*) which has involved many thousands of tests and analyses on apples, peaches, pears, plums, cherries, grapes, cranberries, celery, cucumbers, and tomatoes. Plants were sprayed under a great variety of conditions with mixtures containing compounds of arsenic, of lead, and of copper in known proportions, and the poisons determined in the fruits or parts eaten. The fruits were studied fresh and dried, washed and unwashed, peeled and unpeeled, and the vegetables washed and unwashed. From the results reported it is evident that when fruits and vegetables are sprayed according to schedules recommended by the Bureaus of Entomology and Plant Industry, very little of the material sprayed remains on the fruit or vegetable at the time of harvesting, and the quantity in the edible portions is even less. Since most fruits and vegetables are either washed or peeled before being eaten it seems unlikely that the health of the public will be harmed by the use of foods from sprayed plants. Although the probabilities of chronic poisoning from these sources are remote, it is well to bear in mind the possibilities in cases in which diagnosis is difficult. Undoubtedly, there is much greater danger of poisoning to the workmen who apply the insecticides than to the public which ultimately consumes the food products.

L. E. W.

THE INHALATION OF COAL DUST, ANTHRACOSIS

CENTURIES ago it was known that coal miners after long residence in mining districts and work in the pits begin to raise black sputum. After death the lungs of these miners are found to be black. This disease is technically known as anthracosis (disease condition due to accumulation of coal dust). It was noticed that in some mines the workers suffered greatly from tuberculosis and other diseases of the lungs, while in other mines the prevalence of these diseases was low. Exact and particular observation has shown that the inhalation of coal dust unmixed with sand does not lead to diseases of the lungs, even though it may lead to anthracosis. In other words, the permanent injury to the coal miner varies in proportion to the silicious (sandy) content of the formation in which the miner works.

Improved ventilation of coal mines provides for the inlet of fresh air and the outlet of foul air, controlled by fans. When the nature of the coal necessitates work in sandy rock or other sandy formation, wet drills supplant dry drills and special flues are installed for the purpose of carrying the dust directly away from the miner.

V. C. V.

MINERS' NYSTAGMUS

A SERIOUS disease among coal miners is known as miners' nystagmus. This is a distressing affliction, characterized by involuntary uncontrollable rolling movement of the eyeballs, accompanied by dizziness and unsteadiness in gait and inability to see clearly. Llewellyn describes the condition of the miner suffering from nystagmus as follows:

> One may picture the suffering workmen waiting behind at the pit bottom to allow the lamps of his fellow workmen to get out of sight, slowly developing his adaptation to darkness and groping his way to the coal face where he is for a time more at ease. The constant stooping and bending soon set up oscillation of his eyes and the place swims before him. He cannot find any tool which he may happen to drop, he stumbles over loose lumps of coal; he knocks his head against the roof but still struggles on more by the sense of touch than by the sense of sight. At the end of the shift he waits behind in order to avoid the rush of the younger men, and finally reaching the surface has the same difficulty in his adaptation to light that he had on descent. In the old days the miner afflicted with nystagmus was often met at the pit top by his wife or child, and taken home. The giddiness which he develops keeps him at home through fear of being mistaken for a drunken man; the photophobia [intolerance to light] sends him to bed when the lamps are lighted; while headaches and disturbing dreams spoil his night's rest. These are the conditions under which many men show an endurance, not for one glorious moment, but for months, and their simple statement "I went as long as I could" chronicles a struggle of which any man might be proud.

It has been shown that miners' nystagmus is due to the imperfect lighting of coal mines. The miner must carry a safety lamp in order to warn him of "fire damp," and this lamp gives imperfect illumination. In some mines the safety lamp has been reinforced by electric lights. But even these give small protection, since the black coal in the earth and the coal dust in the air absorb much of the light. In Belgium and Wales miners' nystagmus has been a serious matter. It is not so prevalent in this country. According to the

English Workmen's Compensation Act, nystagmus is made a disease for which the employer is liable. The annual amount paid by employers in Great Britain for nystagmus is at least one million pounds. Further studies in the illumination of coal mines will undoubtedly reduce the incidence of this disease. V. C. V.

DIPHTHERIA

ABOUT thirty-two years ago at a banquet of physicins, George Peck, then governor of Wisconsin, in an after dinner speech, commented on the terrible nature of diphtheria, of which there had recently been an epidemic in Madison of unusual severity and fatality. The governor referred to the obvious futility of all of the remedies which had been tried, and then said that the State of Wisconsin could well afford to offer a million dollars for the discovery of a real cure for diphtheria.

Within less than a year after Governor Peck's address came the announcement of the discovery of diphtheria antitoxin. What an indescribable boon this has been to mankind can be fully appreciated only by the physician who was in practice and who attended patients with this dreaded disease previous to 1891. One of the most heart rending of human experiences was to stand by the bedside of a child, a few hours before in the fullness of vigorous youth, and see that child dying of asphyxiation from "membranous croup," as it was then known, or of profound poisoning, conscious to the last moment. Knowing the uselessness of the various curative measures which had been proposed, the physician felt that his hands were tied, except that in some cases the insertion of a tube into the windpipe gave relief, but even this was often only temporary. Antitoxin administered early and in sufficient doses is one of the most safe and certain curative measures of which scientific medicine has knowledge. To see the membrane covering the throat of a child, accompanied by all of the symptoms and signs of the disease, to see it extend upward to the nose, or down into the larynx, to administer antitoxin and then to see that membrane dissolve and disappear in a few hours, with lessening of all symptoms of the disease—that is by contrast with the picture of the days before antitoxin one of the most thrilling and gratifying experiences of the physician. The mortality from diphtheria in the region of the Great Lakes has been reduced from 100 for every 100,000 of the population previous to 1894 to 15 for every 100,000 in 1920.

Yet, notwithstanding our knowledge of this safe and sure remedy for diphtheria, which should by this time almost have exterminated this terrible foe of childhood, diphtheria continues to be prevalent both in cities and in the country. Not until the discovery of the Schick test, a simple vaccination by means of which the susceptibility of any person to diphtheria, that is, his liability to contract the disease, can be determined—and not until the introduction of injections of toxin-antitoxin, by which persons susceptible to the disease may be made resistant for a long time, did we begin to make really satisfactory progress in greatly lessening the prevalence of diphtheria.

The first and most striking demonstrations of the efficacy of these newer measures in controlling the incidence of diphtheria was made in the larger cities, conspicuously in New York, by Dr. Park and Dr. Zingher of the New York Department of Health and by others. That these measures are even more needful and quite as effective in rural as in urban communities is demonstrated by the results of a campaign in Vermont recently reported by Dr. C. W. Kidder, agent of the United States Public Health Service. The district surveyed had an area of 945 square miles and a population of 35,000; it comprised twenty-six townships, eight of which have each a center or village large enough to maintain a graded and high school. In the other eighteen the population is small and widely scattered, with one room schools having an enrollment of from six to twenty-five pupils each. The parents of more than 60 per cent. of the children requested the application of the Schick test and the injecting of the preventive fluid—toxin-antitoxin—for their children. Of the 761 persons injected, forty-eight were teachers and 713 school children. There were no severe reactions from the injections, and not a teacher or pupil lost any time from school. It was found that the number of persons liable to become infected with diphtheria was larger among the persons in the country than in the city, larger among the well-to-do than among the poorer classes, and larger among the native Americans than among the foreign born. Dr. Kidder concludes that notwithstanding the distances to be covered by the physician and other factors such as the relatively high cost of and the difficulties in the use of the Schick test and of toxin-antitoxin for prevention of diphtheria in rural districts, the work is especially important in just such communities. Moreover, because of the extent and degree of liability to the disease and

the frequent lack of facilities for prompt and adequate treatment of cases, these measures should be included at appropriate times in the activities of rural health departments.

If the public can be generally informed and convinced of the harmlessness of the Schick test in itself, of the protection afforded by the test and the immunization of persons with a tendency to become infected with diphtheria, the disease will be robbed of more of its terrors. There is every reason to believe that the thorough, continued use of these methods will as completely control and all but abolish diphtheria from any community as universal vaccination and revaccination have abolished smallpox.

J. M. D.

HEALTH A BY-PRODUCT OF ECONOMIC DEVELOPMENT

IT IS only within recent years that man has made conscious effort, on any large scale at least, to improve the health conditions under which he lives. The ancient Romans spent much labor and large sums of money, and showed great skill in the construction of their aqueducts in order to bring an abundance of water into their capital, but it was their aesthetic sense and not their desire to avoid water-borne diseases that led them to do this. They enjoyed their baths and delighted in the play of their fountains, but they knew nothing about the transmission of typhoid fever, dysentery, or Asiatic cholera by drinking water. The introduction of window glass was due only to the aesthetic sense, but the admission of sunlight to homes and other buildings did much to kill off the bacilli of tuberculosis and diphtheria and other diseases. The early draining of swamps in this country was done for economic and not for sanitary reasons. Until 1900 all the anti-malarial work in this country was for the purpose of reclaiming and making available for cultivation valuable, productive land. There was no thought of the prevention of disease, nor even of getting rid of pestiferous mosquitoes. The farmers of Wisconsin, Michigan, and adjoining states found that the marshy districts and the tamarack swamps contained the most productive soils, and consequently they proceeded to drain these areas, strip them of their worthless vegetation, and put them under cultivation. Now these lands are yielding great annual revenues in crops of celery, sugar beets, peppermint, and pennyroyal. Sections of Michigan which sixty years ago were not only unproductive, but also were the hatching places of innumerable hordes of mosquitoes are now worth hundreds of dollars the acre and are making their owners rich by the annual production of tons of sugar beets. In 1880, the annual death rate from malarial fever in Michigan was 19.5 for each hundred thousand. This takes no account of the thousands who were infected with and crippled by this disease; fatality in malaria is low compared with the number of cases. In 1880, 320 deaths in the state were actually certified as due to malaria. In 1919, only five deaths were so charged, making an annual mortality of less than 0.1 for each hundred thousand. This is a striking one of many illustrations which show that improvement in health conditions has been secured as a by-product in the production of wealth. Poverty, ignorance, and disease have been and continue to be the most powerful obstructions in man's progress toward better things. It may be that the desire for wealth is a great curse, but it cannot be denied that in his production of riches man has found many things more valuable than that which he sought. We are inclined to complain bitterly because the pine barons of fifty to seventy-five years ago were permitted to rob Michigan and adjoining states of their splendid and apparently boundless wealth, represented at that time in their magnificent forests. While the forest robbers continued their depredations sometimes with the connivance of the administrators of the law and sometimes against their protests, they were consciously preparing the land for the more productive crops of the future, and at the same time unconsciously rendering the region a more healthful and habitable place for coming generations.

V. C. V.

YOOHOO SKINNAY! THE WATER'S FINE!

THIS month small boys revert to the ways of their prehistoric ancestors; their activities must convince even the most skeptical that our family tree has its roots in the now stony remains of the amphibians of the carboniferous age. Once the warm days are here, the small boy finds his greatest pleasure in the water; only the unpleasant symptoms of internal emptiness drive him ashore and home. It would be false to cite his sister as evidence against the general premise of our inherited instincts and tastes. She has them, although unfortunately what we term civilization has somewhat curbed her natural yearning to dip into the water and lie on the warm sand to dry. But in this age we don't believe in curbing a desire for a healthy pastime. If small brother wants to swim, let him swim; and

sister shall swim too. If father has forgotten the days of his youth, let us try by devious ways to make him hear the call of the water, and take mother with him. If there is a sandy bottomed, shallow stream near the village, so much the better. If the city edges on a lake or on the ocean, nature has provided the best of swimming pools. But children and older folks should not want for a place in which to swim because there is only a muddy little stream running through Farmer Brown's pasture. One of the best paying investments that any town or city can make for the future is the development of swimming facilities. Some communities have improved their natural advantages by dredging and slightly damming convenient streams—and the natural pool is the best—but not every stream is adaptable. Other communities have built round pools, oval pools, oblong pools. The importance of a competent engineer to plan the best pool for the individual community and the necessity of keeping the water clean by frequent changing and treatment with chlorine are responsibilities to be recognized and accepted. The attendant can be a college student, home for the summer, who adds to the fun of the youngsters by suggestions and leadership in new water games and sports and to the feeling of security of the parents by presence of mind and expert swimming in case of accident. The youngsters are kept out of mischief; they learn to take part in activities that develop community spirit; they find joy unlimited in play and exercise that help build sound bodies and minds; and they learn an art which may sometime be the means of saving a life. H. M. H.

NEEDLESSNESS OF CANNING POWDERS

CANNING powders are substances supposed to prevent or retard the growth of the organisms which cause spoilage in canned fruits and vegetables, and presumed to be harmless to health. Analyses have shown that the essential constituent in most canning powders is boric acid. Generally a little sodium chloride (table salt) is present, and sometimes there are traces of benzoic acid. The necessity for the use of canning powders has been often denied. Many housewives do not use them since they have learned from experience that sterility by heat is the only requirement in the successful preserving of canned goods. In order to determine the actual value of the boric acid type of canning compounds, numerous experiments were recently conducted by the United States Department of Agriculture (*Circular 237*). In the bacteriologic tests various organisms known to cause spoilage of canned foods were grown in the presence of a canning powder of the boric acid and salt type in the concentrations recommended by the producer. The results showed that the growth of some of the relatively harmless molds and bacteria was inhibited or prevented, but the presence of the canning powder did not have any effect on the growth of *Bacillus sporogenes*, which is one of the chief causes of spoilage in canned foods, nor on the growth of *B. botulinus*, the organism principally responsible for food poisoning. Experiments were also carried out in canning foods with and without the powders. Food packed without the powder kept as well as food packed with it. Some of the bacteriologic tests have been duplicated independently at Iowa State College and the same results obtained (*Journal of Home Economics*, 1923, xv, 64). The use of canning powders is therefore an unnecessary and wasteful practice. It leads to a false sense of security, which may induce carelessness in heating and packing, and may thereby be the cause of the loss of good food, and may even result in death from botulinus poisoning. L. E. W.

SACHA GUITRY'S "PASTEUR"

THE frontispiece and the pictures illustrating the article on hydrophobia, appearing in this issue, were made of scenes in the recent production in New York of Sacha Guitry's play "Pasteur." This play, when produced in France, included in its cast the author and his father. In London it was particularly successful, and the production in New York, with Henry Miller playing the part of Pasteur, received the high commendation of the dramatic critics and the special endorsement of the Theater Guild. As will be noted from the text of the article, Guitry took certain liberties with the historic account of the Joseph Meister incident as written by Vallery-Radot. According to the latter, Joseph Meister was brought to Pasteur by his mother, whereas in the Guitry play the grandfather brings the boy for treatment. As a dramatic endeavor, the play has not been financially successful in the United States. The producer and Mr. Henry Miller deserve our gratitude, however, for having given that part of our public which is appreciative an opportunity to see a play of such importance in the history of modern drama and modern science. M. F.

HEALTH NEWS AND VIEWS

SUNSHINE PLAYGROUNDS FOR HELL'S KITCHEN

Small toddlers, not yet ready for school, and babies in the Hell's Kitchen District, New York, are to have a playground, where, until the Children's Aid Society purchased the land, were tenements like those from which the players themselves will come. "After a child reaches the age of five, he has many opportunities given him, but from the time that he is no longer classed as an infant until the day he enters kindergarten, he is left largely to 'just grow.' It is not safe for him to play unwatched on the street and so he spends most of his time in his tenement home," is a statement of the reason why the society is spending about $300,000 to begin this project. Mothers of the neighborhood are to be told about the center and encouraged to bring or send their children; if they cannot come, arrangements will be made to call for the children. There will be sand piles—and the sand will be washed often to keep it clean for the tots—swings, the wherewithal for playground games, and a leader to start the fun. At noon a lunch of the right kind of food will be served, and milk and cod liver oil in between times to keep away malnutrition and rickets. School girls will take over the playground for the little tots from three in the afternoon until nine at night. Mothers, gathered in groups to sew, chat, and watch their babies will be told how to take care of their children, and in this way a check will be kept on children who need medical attention, which can be given in the clinics of the Society. And even in wet weather the playground is to give its frequenters a place to play, since part of the grounds will be glassed over.

AMERICAN SOCIETY FOR THE CONTROL OF CANCER

In its Bulletin for December this society reviews deaths from cancer during 1921, when, according to the Bureau of the Census, more than 76,000 deaths were due to this cause in the registration area and approximately 93,000 in the whole country. It is estimated that the actual number of persons dying from cancer is even greater than these figures, since postmortem examinations frequently reveal cancer in persons when the disease was not suspected. Regardless of whether or not cancer is on the increase, it is a demonstrated fact that a very large percentage of the public die from this disease and any efforts tending toward its prevention and cure are commendable.

WHAT TO DO IN VACATION

How can the small boy who lives above the corner drug store in a large city or the small girl who lives in the country and longs for school so that she may have playmates pass the time healthfully and playfully after the school door is closed in June until it opens in late August or early September? The Playground and Recreation Association of America can help them if their parents or some persons in their community will only interest themselves in making valuable the long hours of the warm days. Folk dancing, basketry, wood work, sewing, and similar handicraft in small groups, athletics, story telling, community plays, gala events, such as a "pet parade," a doll day when these hopefuls must appear in raiment of their small mothers' making, competitions for boy-made articles that are judged for their beauty, originality, and usefulness—these and many more diversions are suggested by the Association. And while the child is enjoying them "he is unconsciously receiving health, education, and training for citizenship," says Mabel Travis Wood in the *Child-Welfare Magazine* for May. The Playground and Recreation Association of America, 315 Fourth Avenue, New York City, will be glad to supply suggestions and outlines for summer play for children in all types of communities.

INTERNATIONAL HEALTH CONFERENCE

From seventy-two nations will come authorities on education and child health to attend the International Health Education Conference, to meet at Oakland, California, June 28 to July 6. This conference is held under the auspices of the American Child Health Organization. One thousand invitations to the conference are to be sent abroad, 2,000 to leaders in this country in work and sciences related to health.

BANK IDEA USED FOR HEALTH INTEREST

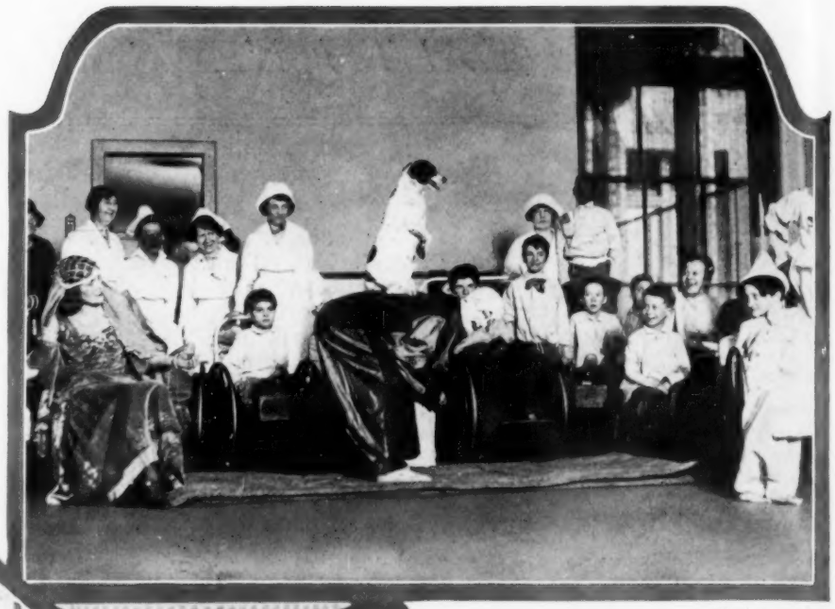
A health bank has been opened in the public schools of Tupelo, Mississippi, as a novel method of arousing interest among school children in hygiene and in the proper care of their bodies. Slips about the size of a bank deposit slip, and on the same style, have been printed with the heading: "Deposit Slip of the Tupelo Bank of Health." Following this are lines for the child's name and grade, after which comes, "Yesterday I observed the following health rules: Cleaned teeth, cleaned finger nails before breakfast, bathed, slept with open window last night," and other items to be checked. Each day the slips are distributed among the children and are filled out and deposited. The scheme is a practical method of arousing and sustaining interest in health matters.

AID TO CRIPPLED BY ST. LOUIS PHYSICIANS

How many children in the community are crippled? How many of these children are able to go to school, public or private, and how many receive instruction at home? How many are being cared for medically, for relief from discomfort and pain, for improvement and cure, and for training for economic independence and rightful enjoyment in adult life? The answers to these questions were sought last year by the committee on public health and instruction of the St. Louis Medical Society. On the basis of the results of the survey, the society offered free medical treatment, corrective and surgical, and hospital care for the crippled children whose parents could not afford to pay for such attendance. Some of the St. Louis newspapers gave the work so much encouragement and comment that the plight of crippled children in the city was generally brought to the attention of its citizens. The St. Louis Medical Society has decided to repeat last year's survey.

A CLOWN—A PUP—AND A JOYOUS BUNCH OF CRIPPLED KIDS

Those who are interested in the influence of the mind on disease may see here the practical exemplification of one way by which to secure cheerfulness. This consists not in any formula which the child must chant, but in the provision of wholesome amusement. These crippled children in the Hospital for Ruptured and Crippled, New York, are being entertained by Fred Stolling and his clown dog.



Underwood

Underwood

THE AIRPLANE AMBULANCE

Time was when the conveyance of a patient to the hospital was a slow, painful, somewhat rough process. In contrast with that day is the present use of the airplane for urgent cases. Here Private Alexander of the Air Service is shown just after his arrival from Aberdeen, Maryland. He was taken from Aberdeen to Washington, D. C., a distance of ninety miles, in forty minutes. The ambulance waits to convey him to the Walter Reed Hospital.

PEACH BLOSSOMS

In California the peach trees have blossomed. Out in the orchard, in the sunlight, the California damsels acquire a liberal dosage of nature's own cheek paint, the kind that will not wash off and that carries health with it. "Freshness" is almost synonymous with health—fresh air, fresh food, fresh clothing, and a not-too-fresh disposition.

Underwood

Underwood

HOW SOUTH AMERICA CARES FOR ITS FOUNDLINGS

The government buildings in Argentina are said to surpass those anywhere else in the world. This is the government building for foundlings.

BRUSH, BROTHER, BRUSH

The Seminole Indian has been reached by the gospel of clean and sound teeth, and is doing his morning drill somewhere in the Everglades of Florida. But why does he use the family sauce-pan? We inquire to know. It has long been a superstition that the teeth of the aborigines keep perfect without attention. When systematic scientific examinations are made, the fallacy of such belief becomes apparent.

Underwood

International

MEDICAL ATTENDANTS AT REFUGE STATION

Dr. Mabel Elliott (center) is in charge of the Near East Relief Medical Quarantine Station on the island of Macronissi, Greece, where 10,000 refugees were handled at one time recently. Dr. Elliott recently received the Greek war cross for her work. Two native Greek nurses are shown with her. In times of great stress, when great masses of human beings are forced to move rapidly to save their lives, infectious diseases become rampant, and all the ills associated with starvation and bad diet appear.

WAND DRILL FOR WOMEN

A team from Czechoslovakia demonstrates the value of wand drill as a form of outdoor gymnastics. This team was entered in the competition at the Women's Olympic Games recently held at Monte Carlo. The interest in athletics for women in all countries is proof of the passing of the state of mind which demanded that women in life and in fiction must faint and tremble in order to be attractive.

Underwood

Wide World

DESTROYING NARCOTIC DRUGS

A collection of heroin, morphine, opium, opium pipes, and hypodermic needles, valued at more than two million dollars, was recently destroyed in New York. The material had been seized by the Narcotic Squad of the Police Department. In the illustration are shown Commissioner Enright, examining a hypodermic needle, and Dr. Carleton Simon, breaking an opium pipe with a hammer.

A FLOATING HOSPITAL FOR TUBERCULOUS CHILDREN

On board a boat anchored in the East River off Twenty-Eighth Street in New York City, fifty tuberculous school children are given an added chance for life by special feeding and outdoor care. They report on board at nine in the morning, and receive a special breakfast. At eleven thirty they have lunch and afterward a period of fifteen minutes for rest in the sunlight. Two teachers and physicians from Bellevue Hospital have been detailed to the boat.

Wide World

Underwood

DISTINGUISHED SERVICE MEDAL TO NURSES

General John J. Pershing presents the Distinguished Service Medal to five nurses of the Army Nurse-Corps. Reading left to right: Captain Sayres L. Milliken, Captain Blanche S. Rulon, Lieutenant Carrie L. Howard, Lieutenant Nena Shelton, Second Lieutenant Catherine G. Sinnott, and General John J. Pershing.

Wide World

SNAKE FARMER EXAMINES HIS CROP

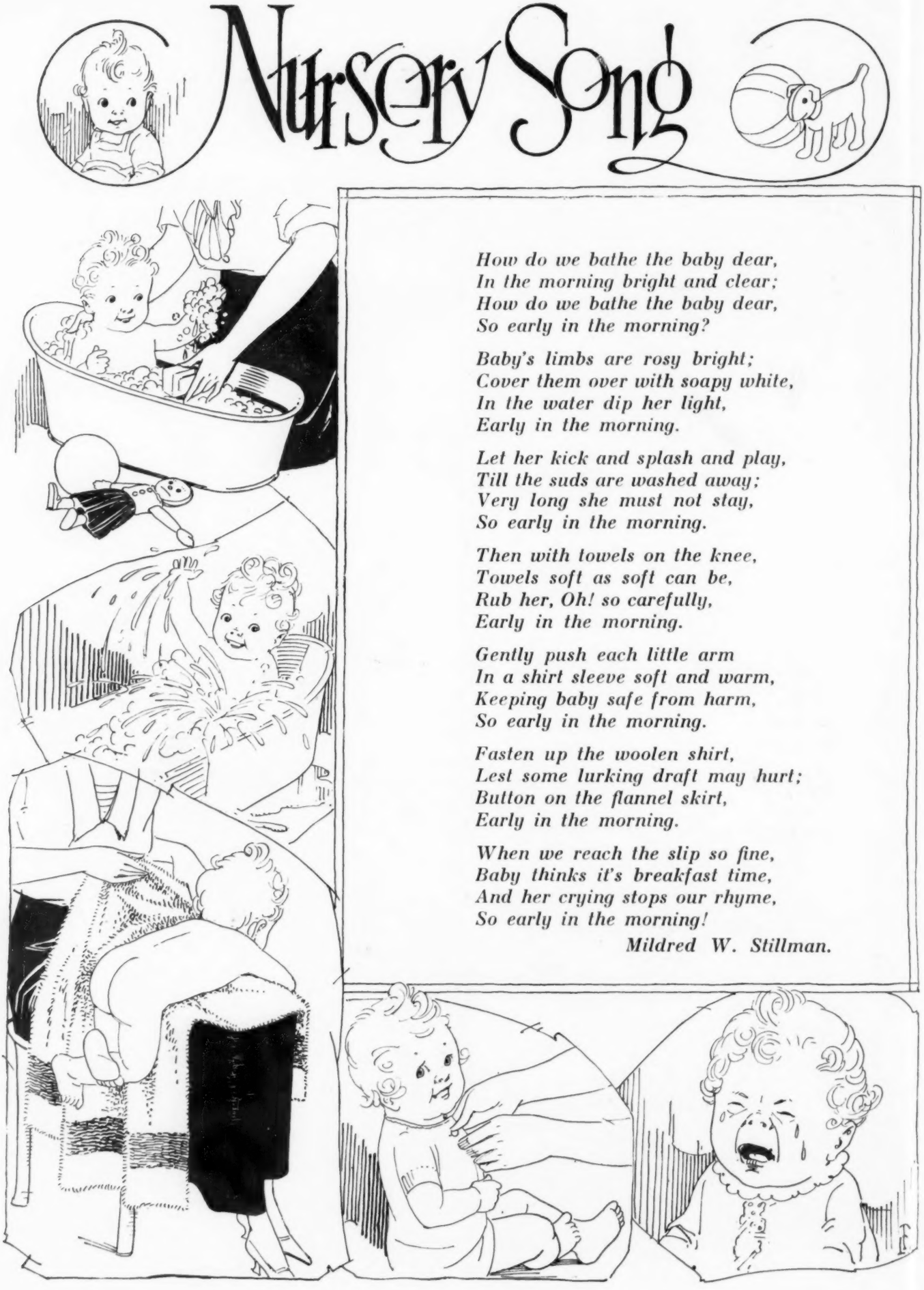
The Brazilian government has established a snake farm in order to provide venom for the making of antisnakebite serum. The snake in the hand of the calm farmer is a chicken snake and nonpoisonous. No such liberties are taken with the poisonous snakes. The serpent has long been a symbol of the practice of medicine. Here is one instance in which the cause of the disease also provides a method of treatment.

Wide World

SNAKES' BUNGALOWS LIKE ESKIMOS'

At Butantan near Sao Paulo, Brazil, are the little huts in which the snakes used for the provision of venom are housed. The unusual sight attracts numerous visitors.

Nursery Song



How do we bathe the baby dear,
In the morning bright and clear;
How do we bathe the baby dear,
So early in the morning?

Baby's limbs are rosy bright;
Cover them over with soapy white,
In the water dip her light,
Early in the morning.

Let her kick and splash and play,
Till the suds are washed away;
Very long she must not stay,
So early in the morning.

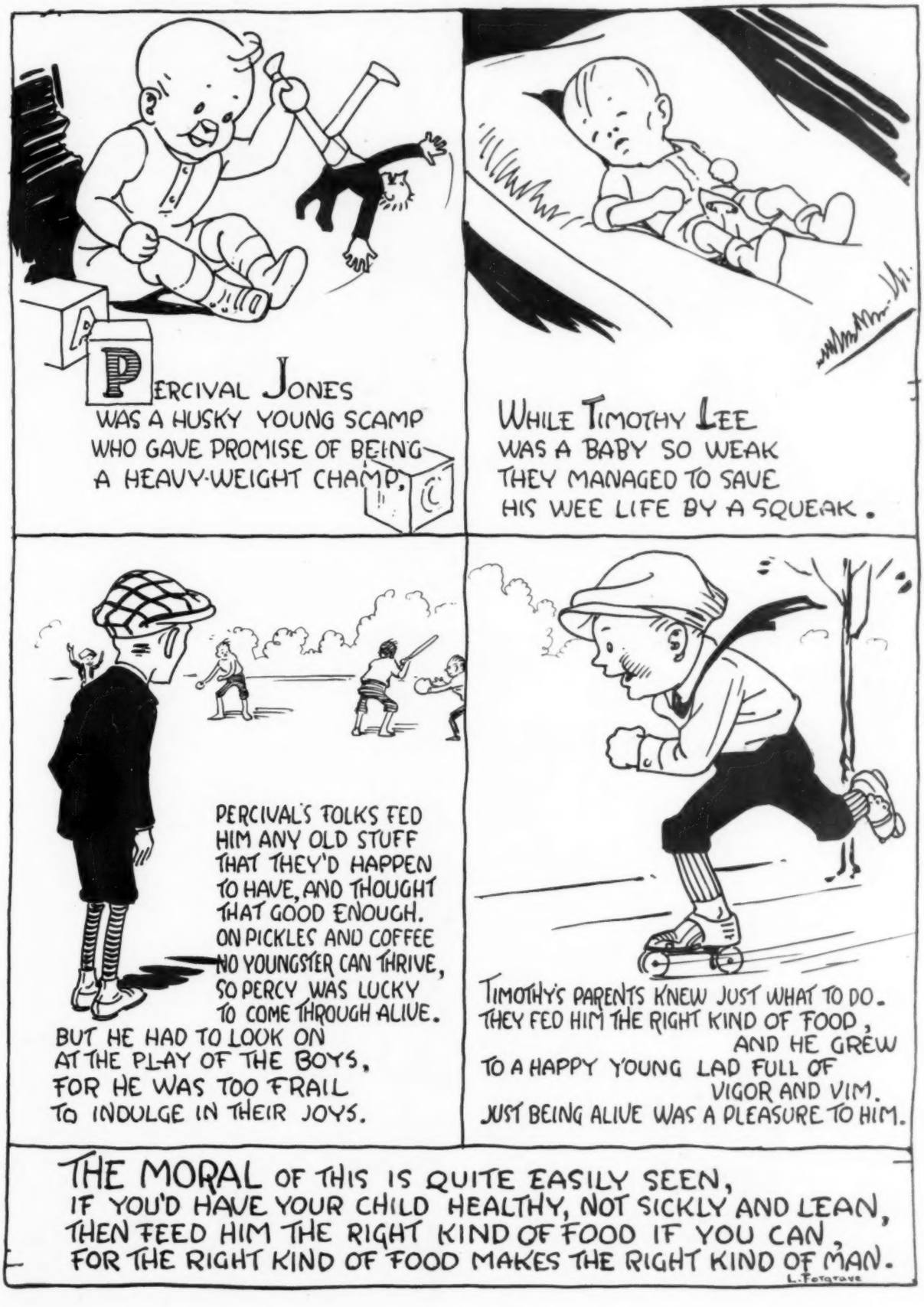
Then with towels on the knee,
Towels soft as soft can be,
Rub her, Oh! so carefully,
Early in the morning.

Gently push each little arm
In a shirt sleeve soft and warm,
Keeping baby safe from harm,
So early in the morning.

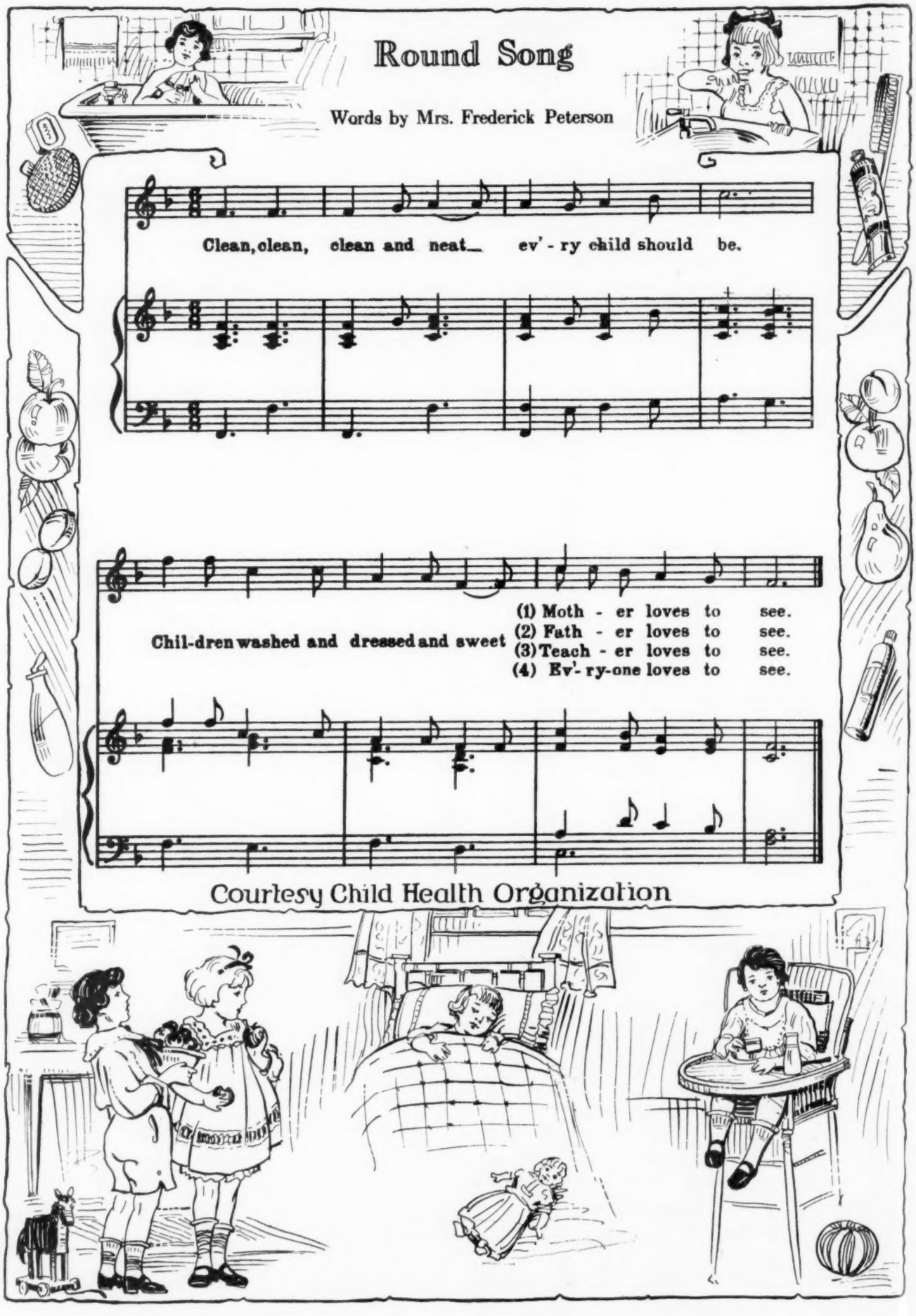
Fasten up the woolen shirt,
Lest some lurking draft may hurt;
Button on the flannel skirt,
Early in the morning.

When we reach the slip so fine,
Baby thinks it's breakfast time,
And her crying stops our rhyme,
So early in the morning!

Mildred W. Stillman.


PERCIVAL JONES
WAS A HUSKY YOUNG SCAMP
WHO GAVE PROMISE OF BEING
A HEAVY-WEIGHT CHAMP.
WHILE TIMOTHY LEE
WAS A BABY SO WEAK
THEY MANAGED TO SAVE
HIS WEE LIFE BY A SQUEAK.
PERCIVAL'S FOLKS FED
HIM ANY OLD STUFF
THAT THEY'D HAPPEN
TO HAVE, AND THOUGHT
THAT GOOD ENOUGH.
ON PICKLES AND COFFEE
NO YOUNGSTER CAN THRIVE,
SO PERCY WAS LUCKY
TO COME THROUGH ALIVE.
BUT HE HAD TO LOOK ON
AT THE PLAY OF THE BOYS,
FOR HE WAS TOO FRAIL
TO INDULGE IN THEIR JOYS.
TIMOTHY'S PARENTS KNEW JUST WHAT TO DO.
THEY FED HIM THE RIGHT KIND OF FOOD,
AND HE GREW
TO A HAPPY YOUNG LAD FULL OF
VIGOR AND VIM.
JUST BEING ALIVE WAS A PLEASURE TO HIM.
THE MORAL OF THIS IS QUITE EASILY SEEN,
IF YOU'D HAVE YOUR CHILD HEALTHY, NOT SICKLY AND LEAN,
THEN FEED HIM THE RIGHT KIND OF FOOD IF YOU CAN,
FOR THE RIGHT KIND OF FOOD MAKES THE RIGHT KIND OF MAN.
L. Fosgrave

Round Song

Words by Mrs. Frederick Peterson

Clean, clean, clean and neat— ev'-ry child should be.
Chil-dren washed and dressed and sweet
(1) Moth - er loves to see.
(2) Fath - er loves to see.
(3) Teach - er loves to see.
(4) Ev'- ry-one loves to see.

Courtesy Child Health Organization

BOOK REVIEWS

RACE DECADENCE: By William S. Sadler, M.D. Cloth. Price, $2.50. Pp. 421, with 18 illustrations. Chicago. A. C. McClurg and Company. 1922.

This is a serious, well written, sensible book, and should be widely read. The physician can find much in it. The trained nurse can probably find more, and we wish that all law-makers would read it. The author has presented a fair and just statement of present conditions in our country. He states that "the truest patriotism—the highest citizenship—is evidenced not by blind devotion to the thought of our national greatness and destiny, but rather by an honest willingness to learn the truth, sincerely to examine the facts, and then fearlessly and bravely face the issue, grapple with the difficulties, and by perseverance and common sense seek scientifically and thoroughly to overcome any handicap which the errors of the past and the mistakes of former generations may have placed upon the people of the present day, all the while keenly recognizing our great duty so to conduct our social, political, and other affairs as to prevent the further handicapping of succeeding generations as the result of the passing on to them added or cumulative burdens of the same, or a worse, nature than those we labor and suffer under at the present time."

INDUSTRIAL HYGIENE AND MEDICINE: By E. W. Hope, O.B.E., M.D., Medical Officer of Health for the City and Port of Liverpool, in collaboration with W. Hanna, M.A., M.D., and C. O. Stallybrass, M.D., D.P.H., Assistant Medical Officers of Health for the City and Port of Liverpool. Cloth. Price, $7.00. Pp. 766, with illustrations. New York. William Wood and Company. 1923.

For health officers, health inspectors, persons interested in industrial medicine and hygiene, and for all chemical engineers this is a most valuable book. As health officer of Liverpool and as professor of public health of the University of Liverpool, Dr. Hope, the senior author, is well known to every one interested in city sanitation. Liverpool was the first city in the world, we believe, to employ a full-time medical officer of health, when, in 1847, Dr. Duncan was appointed salaried medical officer of health. Duncan was a native of Liverpool and had shown his deep interest in the health conditions of that city, especially among the poor, by his practical work and papers. At that time the annual death rate in Liverpool was thirty-six for each thousand. Between eighty and ninety thousand of the inhabitants of Liverpool lived in inadequate, filthy dwellings in blind alleys, and from thirty to forty thousand more had their homes in cellars. Dr. Duncan served as health officer of Liverpool for sixteen years, during which time he reduced the death rate by at least one fourth and succeeded in greatly improving the living conditions of the working classes. Dr. Hope has proved a worthy successor of this early pioneer in municipal hygiene. In the volume by these two authors are chapters on vital statistics of occupation; general hygienic considerations, industrial poisonings and their effects; dust as a cause of disease; industrial infection; occupational affections of the skin and special senses; miscellaneous occupations in relation to health; industrial physiology; industrial welfare and industrial accidents. The book is entirely up to date, the information reliable, the type clear, the mechanical make-up excellent, and the illustrations are good.

ROUND SONG

Additional Verses Suggested by the Child Health Organization

(Music on opposite page.)

Brush, brush, brush your teeth,
Brush them every day.
Father, Mother, Sister, Brother,
Every, every day.

Take, take, take a bath,
Every, every day.
Father, Mother, Sister, Brother,
Every, every day.

Drink, drink, drink some milk,
Drink some every day.
Father, Mother, Sister, Brother,
Every, every day.

Eat, eat, eat some fruit,
Eat some every day.
Father, Mother, Sister, Brother,
Every, every day.

Sleep, sleep, windows wide,
'Twill make you bright and gay.
Father, Mother, Sister, Brother,
Every, every day.

REST AND OTHER THINGS: By Allen K. Krause, A.M., M.D. First Edition. Cloth. Price, $1.50. Pp. 159. Baltimore. Williams and Wilkins Company. 1923.

The author of this book is one of the most interesting and delightful writers of both popular and scientific contributions to the literature on tuberculosis. In the little brochure before us he discusses rest, the treatment of tuberculosis, sputum infection of children, adult tuberculosis from childhood infection and its prevention, antituberculosis measures, the tuberculosis problem, the elements of an adequate tuberculosis program, and some problems of medical education in tuberculosis. Krause defines rest as "relief from strain," and he holds that "it is the duty of physicians to explain why relief from strain is important and that rest can be measured only by a conscious reaction in the patient. It follows therefore that the patient must rely on his own intelligence and behavior in the treatment of his case while the physician should always serve as a guide and mentor to help out in the details of management and to give to the patient all the support and comfort that a rich and wide experience can bestow." The little book is well written and is sound in fact.

QUESTIONS AND ANSWERS

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a two-cent stamp. If the question is of general interest, the answer will be published; otherwise it will be sent by mail. The names of correspondents will not be published.

First Aid for Snake Bite

To the Editor:—How is permanganate of potassium applied as a remedy for the bite of a poisonous snake? Is it a powder or a liquid?

G. M., Illinois.

Answer.—Potassium permanganate, as generally purchased in the drug store, is a purple crystalline substance, although it may be had in the form of powder. Only those familiar with the substance should attempt to pulverize the crystals, however, for fear of an explosion. Potassium permanganate is soluble in water, forming a beautiful deep purple solution. In the treatment of poisoning from snake bite, the wound should be laid well open, an incision generally being made to accomplish this. A tight bandage, handkerchief, or string should be tied between the wound and the body. The potassium permanganate may be applied either in the form of a solid or as a solution (made by dissolving one part potassium permanganate in thirty parts of water), by means of a swab. To be of value the antidote must be applied within a very short time after the bite. If potassium permanganate is not available, sucking the wound is the best procedure for "first aid." Strong coffee will aid the action of the heart. These procedures should not be delayed for a moment in order to send for a physician, but a physician should be summoned as soon as possible.

Cross Eyes

To the Editor:—I have been told that it is dangerous to operate for cross eyes. My right eye is about 30 degrees cast as a result of measles. I am twenty-seven years of age and would like to have it remedied.

R. F., New York.

Answer.—Operation for the relief of cross eyes is not dangerous in itself, but there may be special reasons against the operation for the individual patient. This can be determined only by a competent ophthalmologist. Thousands of operations have been, and are being, successfully performed for the relief of this condition.

Cause of Pellagra

To the Editor:—What is the cause of the disease pellagra?

P. K., New Hampshire.

Answer.—There is still much difference of opinion as to the cause of pellagra. Many physicians believe it to be a disease due to dietetic causes, either to a lack of protein foods or of certain constituents of these foods with an excess of carbohydrates. It is difficult to harmonize this theory, however, with the epidemic appearance of pellagra at certain times and with the fact that pellagra appears in persons who apparently have not been subject to any dietetic deficiency. There is still some ground for the belief that certain micro-organisms may have to do with the cause of the disease. Some interesting experiments by Dr. Jobling and Dr. Arnold suggest that possibly, under certain conditions, certain fungi develop in the intestinal tract a fluorescent substance which renders the patient more susceptible to the action of light. Their work is reported in an article which appeared in the *Journal of the American Medical Association* for February 10, 1923, and in connection with the report the theories as to the cause of pellagra are discussed.

Warts

To the Editor:—My daughter, eleven years of age, is embarrassed and physically uncomfortable because of an excessive number of "seed" warts on her hands. What will rid her of them without scarring her hands? Is there something wrong with her diet?

F. L., Tennessee.

Answer.—The cause of warts is still unknown. apparently there is seldom any relation between their appearance and the diet of the person suffering from them. The choice of method for treatment should be left to the attending physician.

Fruitola

To the Editor:—Do you know anything about the gallstone remedy "Fruitola"? It is to be taken in one large dose at the beginning of an attack.

M. B., West Virginia.

Answer.—"Fruitola" was examined in the American Medical Association Chemical Laboratory some time ago, and was found to be nothing more mysterious than olive oil and Seidlitz powders. A large dose of bland oil, such as olive oil, followed by a saline, such as Seidlitz powders, produces soapy concretions which the victim is led to believe are gallstones. Of course, Fruitola will not cure gallstones and will do nothing that cannot be done equally well with half a pint of olive oil and a couple of Seidlitz powders. An article on Fruitola and on other alleged cures for gallstones will be found in the pamphlet "Miscellaneous Nostrums" (price 30 cents) published by the Association.

Cause of Superfluous Hair

To the Editor:—What is the cause of superfluous hair on the face and limbs of a young woman? It first appeared at about nineteen years of age. Is there any way to get rid of it?

C. K., Arizona.

Answer.—The amount of hair on the body varies with the natural differences in the skin of persons. One man, for example, has a bushy, heavy beard, another a scant beard; one woman has long, heavy hair on her head, another never has more than a relatively small amount of rather short hair. This is due to the natural differences in the structures of the skin. They are born that way. A natural but extraordinary development of the hair follicles and hairs of the skin is the cause of the heavy growth of hair on the face and limbs, regarded by some persons as superfluous hair. Probably no local cause is responsible for the condition. This sounds like rank heresy to some, but long continued experiments indicate uncertainty as to whether or not hair will grow beyond the amount normal for a given person.

The only way to remove hairs is to destroy the hair follicles. This can be done *en masse* with

x-rays, but the production of permanent loss of hair in this way is liable to cause permanent damage to the skin. It is dangerous and should not be attempted in many cases. The hair follicles can also be destroyed one at a time by electrolysis. This is a tedious method, only partially successful except with skill and patience, and it can hardly be used for a great number of fine hairs. Probably the best way to get rid of hairs is to pull them out. After they have been pulled out once, it does not require much attention to keep them pulled out. There is no reason to believe that this makes them coarser, although every person who has what he considers superfluous hairs attributes the growth to something which he has done. It may be true, in fact, that the constant pulling out of hairs, with the resulting injury to the follicles, may actually cause a diminution in their growth.

Sexual Development of Girls

To the Editor:—Can or will you recommend a brief volume on the sexual development of girls, suitable to give to a girl eleven or twelve years old?

G. W. M., New Hampshire

Answer.—Any of the following books are recommended:

Margaret, the Doctor's Daughter. By Winfield S. Hall, M.D. Published by the American Medical Association, Chicago. Price, 25 cents.

Ten Sex Talks to Girls. By I. D. Steinhardt. Published by J. B. Lippincott, Philadelphia. 1914. Price, $1.00.

Confidence Talks with a Young Girl Concerning Herself. By Edith Lowry. Published by Forbes and Company, Chicago. 1910. Price, 50 cents.

What a Young Girl Ought to Know. By Mary W. Allen. Published by Vir Publishing Company, Philadelphia. 1905. Price, $1.00.

Epidemic Jaundice

To the Editor:—I have heard a number of people mention epidemic jaundice. I did not know that this disease could be epidemic. Can it?

A. B., Ohio.

Answer.—Epidemic or infectious jaundice does occur, probably of several types, ranging in severity from mild jaundice to a severe and fatal disease. In 1886, Dr. Weil first described an extreme type of this infection in children, leading to rapid development of jaundice with fever, nausea, and vomiting. There is some question as to whether this should be considered as a special type of the disease.

Graham's "Neutroids"

To the Editor:—My daughter, aged twenty-four, is quite stout—170 pounds—and is very anxious to reduce. The enclosed circular from the Graham Sanitarium, Inc., about "Neutroid Tablets" came to me. Will you kindly let me know if this treatment would be good and harmless?

P. E., Connecticut.

Answer.—The Graham Sanitarium is a trade style used by one R. Lincoln Graham who would have the public believe that he is "an eminent physician—a stomach specialist who has obtained exceptional honors in his profession." Graham is so "eminent" that most careful search failed to give any information regarding him except that of a biographical nature. Graham also poses as having "written many authoritative medical articles and has lectured before many medical societies." Painstaking search of medical literature for years past fails to show that Graham has ever contributed a single medical article to any medical journal. Graham sells, on the mail-order plan, a nostrum he calls "Dr. Graham's Neutroids." In his advertising he has told the obese that they may eat all they want and anything they want, "there is absolutely no need to restrict yourself"; neither is it necessary to exercise. All the over-fat have to do is to take Neutroids. Graham's nostrum was subjected to careful analytical examination in the American Medical Association Chemical Laboratory, which reported that it consists of iodol, 50 per cent., magnesium carbonate 43 per cent., with small quantities of starch and talc. Iodol is distinctly poisonous, even when applied externally, and a number of cases of poisoning have been recorded. A reprint of an article dealing with Graham and his Neutroids will be sent without charge to any one on receipt of a request accompanied by a stamped addressed envelope.

Afraid of a Toothbrush

To the Editor:—How can I teach my little girl, eleven months old, not to fear a toothbrush? I have the smallest one with the softest bristles that I could find.

S. P., Arizona.

Answer.—It is the opinion of competent dentists that brushing of the teeth is unnecessary before the age of two or three. If, at the age of about two and a half years, your child is given a soft tooth brush as a plaything and thus becomes accustomed to it, there will be little difficulty in persuading her to permit its use in gently brushing the teeth and in teaching her the method of using it.

Lepso

To the Editor:—Would you please let me know about the Lepso treatment for epilepsy? Is it a good medicine to give or is there danger in trying it?

E. P., Indiana.

Answer.—The Lepso humbug is dealt with in the pamphlet, "Epilepsy Cures" (15 cents) published by the American Medical Association. Like most "epilepsy cures," Lepso was found by the Association's chemists to be essentially a mixture of bromides. It was found to contain the equivalent of 51 grains of potassium bromide to the dose. The long continued and indiscriminate use of such a mixture, taken in ignorance of the danger involved, would be liable to result in fastening on the victim the evils of chronic bromism with all its demoralizing effects.

Cause of Arthritis Deformans—Aspirin

To the Editor:—(1) About a year ago I read in a Leland Stanford paper that a single cell germ, an ameba, which causes some forms of dysentery, especially those severe cases of the tropics, was thought to be the cause of arthritis deformans. Has this theory been verified and has any advance been made for the cure of this disease? (2) Can any harm, if so what, come from taking daily from 15 to 20 grains of aspirin and keeping it up for a long period?

N. B. C., Iowa.

Answer.—1. There is no doubt that an ameba (*Entameba histolytica*) causes a certain form of dysentery. Recently Professor Kofoid of the University of California has suggested that the same organism causes arthritis deformans. This claim awaits verification and so far has not influenced the treatment of this disease.

2. It certainly is harmful to take from 15 to 20 grains of aspirin daily and keep it up for a long period.

HEALTH REVIEWS

HEALTH IN CURRENT MAGAZINES

THE MODERN PRISCILLA

In the April issue of this monthly, Mary Swartz Rose, associate professor in the Department of Nutrition, Teachers College of Columbia University, publishes the third article of a series on the "Wise Buying of Food." Mrs. Rose has a style which is particularly adapted to reading by the public. The purpose of her article is to teach people how to choose food for establishing positive health. Her endeavor is to create a favorable impression on the mind of the growing child by convincing it of the importance of choosing foods that build rather than those that merely entertain. Emphasis is placed on fruits and milk as the main constituents of a suitable diet. It is pointed out that milk is the only practical source of lime in the diet of children; that it also furnishes a goodly amount of protein; and that it will guarantee a sufficient supply of two of the three vitamins which recent investigation shows to be necessary for adequate nutrition. It is not only necessary to provide milk, but also to see to it that it is consumed by the family. Next to milk come vegetables; particular emphasis is placed on tomatoes. At least two kinds of vegetables besides potatoes should be a constant part of the diet. At least one kind of fresh fruit or vegetable every day is a good rule. For children more than three years of age, fruit twice a day is desirable: once fresh fruit, and once canned or dried fruit for economy. Among cereals, grain products from which the bran has not been entirely removed give the largest nutritive return. On the money invested, Mrs. Rose indicates that most families' diets would be improved if the meat bills were cut in half and the milk and vegetable bills increased. Sugar is to be used in moderation, and molasses, honey, jams, and preserves considered almost equivalent to sugar. Of the fats, butter is, of course, the most palatable, but likewise the most expensive, and, if economy is important, Mrs. Rose advises that the shortage be made by limiting the quantity of butter. For children, eggs are a good substitute for meat. An interesting portion of the article is a concluding paragraph which indicates how the housewife may calculate the food value of the food purchased.

MILK—THE ESSENTIAL FOOD

Supplementing the article by Mrs. Rose, is a consideration by Eula M. Dow, associate professor of foods in Simmons College. After a brief general comparison of the relative values of dried milk and evaporated milk, the author provides excellent recipes for creamed soups and sauces, in which milk is utilized as a basis.

A HERITAGE OF HEALTH

A brief article in this issue concerns the fundamental principles of heredity. The author, Udell Bogardus, points out the undesirability of marriages between first cousins, between persons in whose families run taints of mental defect, and between persons having communicable diseases.

PEOPLE'S HOME JOURNAL

In the April issue of this periodical is a discussion of the vitamins on the usual lines of articles on this subject. The main portion is followed by a series of recipes including meals and an outline of meals for the day, planned for the purpose of supplying a sufficient amount of the necessary vitaminic substances.

WOMAN'S HOME COMPANION

In its issue for April the *Woman's Home Companion* emphasizes its editorial policy, urging women to support the Sheppard-Towner Bill and to demand that Congress be given the power to limit or prohibit child labor. The periodical has nothing to say concerning any possible objections to the legislation, but has devoted itself wholly to securing ratification of the former bill by the individual states. As has been pointed out in previous issues of HYGEIA, the *Woman's Home Companion* conducts several special departments which issue pamphlets on such subjects as keeping well, the care of children, and prenatal care. The pamphlets may be obtained by communicating with the publication at 381 Fourth Avenue, New York.

PICTORIAL REVIEW

In the May issue of the *Pictorial Review* begins a serial by Joseph C. Lincoln, "Dr. Nye of North Ostable." This deals with life in the Cape Cod country and the central figure is a physician of modern training. The story brings out incidentally many points of health interest in community life.

The problem of heredity is given special consideration by Albert Edward Wiggam in an article, entitled "Brains—A Family Affair." The article is based chiefly on the descendants of the families of Martin Kallikak. This family, one of the most reputed in the study of heredity, has been described in numerous books and articles. One branch of the family, descended from a feeble-minded mother, resulted in 480 progeny, including 143 feeble-minded, thirty-three immoral, thirty-six illegitimate, three epileptic, and three criminal; eight were keepers of disreputable places. The other branch of the family with the same father but with a different mother, a Quaker of excellent stock, had 496 descendants, all normal, including governors, soldiers, doctors, lawyers, judges, and educators, many of them notable men and women.

Miss Carolina C. Van Blarcom, author of "Getting Ready to Be a Mother" and formerly assistant superintendent in the Johns Hopkins Training School for Nurses, begins a series of articles for the mother-to-be. The preliminary article merely emphasizes the importance of proper information for the prospective mother. The article is exceedingly sensible and timely. In her conclusion, the author says:

> No matter what it costs, begin at once to safeguard your baby and yourself by securing medical care. You will then be able, when the nurse lays him in your arms, to look him in the eye with the assurance that you have done all in your power to give him the best possible start in life.

In the department known as The Home Bureau, a "Correspondence Course in Babycraft," is continued by Dr. Emelyn L. Coolidge. The present article deals with spring fever. The only point in

the article to be criticized is the attempt at long-distance diagnosis, in which the author hazards a guess of spring fever on the basis of complaints of headache, legache, tired feeling, crossness, and irritability. The advice as to treatment of the actual lassitude, which is a prominent feature of the coming of spring, is excellent hygienic advice. However, much is said of "legache" being a tendency to rheumatism. Evidently, in the desire to make her article thoroughly understood, Dr. Coolidge has elided some of the necessary scientific explanation to make her meaning clear.

The *Pictorial Review* conducts several regular departments which furnish pamphlets and reprints of great value to those interested in the care and feeding of the baby, and in the family diet. These may be secured by writing to the periodical at Seventh Avenue and Thirty-ninth Street, New York.

THE DELINEATOR

An excellent editorial in the *Delineator* for May calls attention to the recent amalgamation of the Child Health Association and the American Child Hygiene Association.

Dr. William Palmer Lucas, professor of the diseases of children in the University of California, contributes an extensive article on the "Health of the School Child," in which he points out how the teacher may help the parent in teaching the principles of health. Parents are urged to aid in establishing proper health measures in schools. Dr. Lucas describes the work of the Child Health Organization, particularly the teaching of health by the use of games and competitive record systems. He emphasizes the importance of health inspection and describes in detail the experiment made by San Francisco during 1921 and 1922, which indicated to the educators of that city the importance of incorporating the teaching of health in the regular curriculum. Obviously, proper instruction involves the provision of a school nurse and a school physician who can give suitable advice. Special emphasis is laid on the value of a proper school lunch and on securing the cooperation of the child in the work.

MCCALL'S

In the May issue of this periodical, Dr. E. V. McCollum and Nina Simmonds continue their important series on the provision of a proper diet. The present article is devoted to canned foods. It is pointed out that food poisoning from canned food is relatively rare; in fact, almost never occurs under the modern system of canning. The authors emphasize the fact that canning sometimes results in the destruction of certain vitamins, and that it is necessary to replace these vitamins with fresh vegetables in order to bring up the quantity of vitamin C, necessary for proper nutrition. It is recommended that everyone take two salads a day to provide suitable amounts of fresh raw food. The statement is made that for general purposes "canned foods are among the cleanest, safest, and most attractive foods which enter into our daily diet."

MOUNTAIN CHILDREN IN KENTUCKY

Corn bread and sorghum, dried beans, fat salt "middlings," and, as a redeeming food, usually milk, are the diet for much of the year of children in certain mountain counties of Kentucky. At the request of the Kentucky State Board of Health the Children's Bureau of the United States Department of Labor has made a survey of the physical condition, and published it under the title, "The Nutrition and Care of Children in a Mountain County of Kentucky." Only 16 per cent. of the children studied in this county belonged to families who could afford the "modest requirements of adequate living." Almost 50 per cent. belonged to families whose incomes were so small that the lowest standard of care of health seemed impossible. Many lived in board sheds, small new shanties, or old log cabins where the cold in winter made habits of cleanliness almost out of the question. Only about 25 per cent. had warm enough clothing. Many of the children whose diet was largely milk and unbolted corn meal were found to be well nourished, while those who had only small quantities of milk were undernourished because their other foods did not supply the essentials for growth. The classification of three fourths of the children as either poorly or fairly well nourished tallied closely with the poverty of their diets. Except in a few families fresh vegetables and fruits were eaten only during a short period in the summer and autumn, and fresh lean meat during an even shorter period. The few eggs gathered were sold for ready cash. Milk was thus the only food that could be counted on to furnish the proteins, minerals, and vitamins needed for growth. The children were given physical examinations by the Children's Bureau physician with the "Child Welfare Special," a motor truck built and equipped for such examinations; half of those examined had enlarged or diseased tonsils, and many had adenoids. Ninety of one hundred and four from six to eleven years had decayed teeth. Four fifths of them all did not even own a tooth brush. Babies were commonly fed solid food too early, and children allowed to drink coffee when milk was scarce, and to eat between meals. Their need for more sleep than adults was generally ignored. In the report it is suggested that the conditions of health may be improved by the employment of a full-time county agricultural agent and a home demonstration agent who can instruct in improving the soil and the methods of farming, and encourage the raising of more vegetables and the use of more milk, eggs, blackberries, and other available foods. A county public health nurse is also needed to tell the mothers of the needs of their children in diet and hygiene and to teach these subjects in the public schools.

EDUCATION FOR PARENTHOOD

In the February, 1923, *Journal of Home Economics,* Alma Binzel tells of some of the efforts being made through courses in schools of home economics to prevent the unhappy consequences that follow parents' interpretation of their children's perfectly natural behavior as willfulness and naughtiness. "The distinction between child-care and its goal of physical health and wholeness, and child-management with similar objectives for the mental-moral aspects of development was readily grasped by the home economics group," Miss Binzel says. The first attempt at practical instruction was at the University of Minnesota. In 1919, lectures on child training were given the eighty seniors in the Division of Home Economics. Two children from an orphanage were loaned to the home demonstration houses so that the young women might also have laboratory experience in intelligent care and management of young children. The course has now been made a three-hour required subject. Lectures and laboratory courses in child training were begun in the New York State College of Agriculture in the spring of 1920; this soon became a popular elective. Other states, among them Oregon, Nebraska, North Dakota, Michigan, and Maine, are giving similar courses.

WHAT PHILADELPHIA IS DOING FOR THE PREVENTION OF HEART DISEASE

The prevention of heart disease depends primarily on the elimination and control of those factors that damage the heart muscle, its lining or surrounding membranes, or the blood vessels. Among the factors that have such action are bacteria and their products, pernicious chemical substances arising from other sources within or without the body, and undue tax on the heart created by abnormal forces. It is generally known that the infectious diseases are the most important causes of preventable heart diseases. It follows that decreasing the number of cases of such infectious diseases in childhood, through proper isolation and control and early treatment, will greatly diminish the number of cases of heart disease. Avoidance of excess in diet, liquids, and exercise will eliminate an additional number. In many instances heart disease develops following too early a return to daily tasks after a wasting disease, such as influenza, typhoid fever, or pneumonia. In such diseases a long convalescence is desirable, and proper rest, good diet, fresh air, and sunshine in liberal doses invariably serve as a prophylactic against damage to the heart. Finally, diseases of the kidneys are usually associated with disturbances of the heart, and early, proper attention to patients with such diseases will inevitably reduce the number of prospective members of the heart disease group.

Occupational treatment for convalescents.

With these considerations in mind, the Department of Public Health of the City of Philadelphia recently devoted a special number of its bulletin to a consideration of the efforts being made in that city to prevent some of the preventable cases of heart disease. Physicians in the department of health are being instructed in modern methods of diagnosis and preventive treatment of heart disturbances; children with irregularities of the heart are being weeded out by school physicians from the regular schools, and are being referred to special clinics and health centers and to cooperating hospitals; the nurses in the division of child hygiene are on the lookout for children and adults requiring treatment; heart clinics have been established in health centers; nutrition and special classes are conducted in the public schools; ten dental clinics and the general hospitals are giving special attention to caring for diseased teeth, tonsils, and adenoids; a special clinic for the care of heart diseases has been opened at the Philadelphia General Hospital; and a special home is to care for children recovering from infectious diseases.

The bulletin also contains several papers on the development of associations and the establishment of clinics throughout the country for dealing with the problems of heart disease.

Outdoor air and play for convalescents.

Oh! Very Well

JUNE

It is the merry month of June,
Vacation time is coming soon.
In forest, wood, or some sand dune,
The vagrant pipes a merry tune.
The fisherman gets out a spoon,
The hunter chases the raccoon,
Across the water cries the loon.
The flowers now are Nature's boon.
The lovers by the seaside croon.
It is the merry month of June.

OUR OWN QUESTION BOX

Dear doctor:—For three years I have been suffering a great eel with tuberkuloosis. Do you think my condition is bad? T. B. KOFF.

ANSWER: You have a bad spell of tuberculosis.

Dear doctor:—How is it you are always able to answer the questions your readers ask you? OSWALD H.

ANSWER: I am not, Oswald. I only print those I can.

A MONOLOGUE

"I wonder when he's coming. I suppose he'll see half the people in town before he get's here. I'm not getting a bit better. Well, I guess I'll read some more. —Nurse, would you mind giving me a drink of water? Thanks. Now would you mind straightening my pillows? Thanks. Say, are all the patients as cranky as I am?—Oh, yes, I am.—I wouldn't be a nurse for all the money in the world. Nowadays it takes all the money in the world to keep one around the house a while.—Oh, here's the doctor. Good morning, doctor. —Oh, doctor, I coughed all night.—The record says I slept well? Well, I don't write the record, doctor. How much is my temperature this morning, doctor? None of my business! Well, I like that. It's my temperature, isn't it. I can have it! Well, I'd hate to give it to anyone else. It's the only temperature I've got. I guess I got back at you there, doctor! Now, doctor, what can I eat? Anything I want. Oh, please don't say that doctor. Please give me a diet. All the other patients on this floor have diets. Will you be back again today, doctor? Oh, he's gone! Nurse, ain't he the sweetest man!"

IT IS WELL TO INVESTIGATE

The teacher was doing her best to enforce the rules of quarantine. Consequently, when she heard indirectly that Mary Jane's sister had the measles, Mary Jane was taken to task: "You should have reported your sister's illness at once. You must go home now before any more mischief can be done by your contact with other children."

Mary Jane went willingly. At the door she turned. "My sister lives in New Zealand," she said.

RECEIVED BY THE SCHOOL TEACHERS

"Please excuse Willie for going home at recess. He got a pain in the boy's basement and couldn't get up the stairs."

"Please excuse Mary for being jumpy. She just got better of St. Fido's dance."

"Miss G.—James dident have any doctor he only had measles in 2 days he was alright he made a mistake and said he had a doctor."

SPRING SONG

The voice of spring.
(Courtesy of Judge)

POET'S LICENSE

Our aim is to help you and open your eyes
On how to be healthy and wealthy and wise;
But no poet's art can descend to what goes
In the most polite circles of hygienic prose.

Some things to our meters we never can mold;
A plain poet's license is all that we hold.
And who'd stand a poet that turned you out jingles
On ringworms and tapeworms and rickets and shingles?

Keith Preston.

SAID JOSH BILLINGS

When a man loses his health, then he begins to take care of it.

THE DOCTOR'S LAMENT

You came into my office with a long sad tale of woe,
I listened to you, though 'twas late and I was weary;
I gave you medicine to take, and told you all I know,
About the treatment of your case, and though your look was leary,
You followed my advice and now you're well.
So don't you think you ought to pay my fee?
It may not seem a vital thing to you, but h———,
It means an awful lot to me.

Anon.

DOCTOR. That pain around your heart, Sam, will go away in a little while.

SAM. Yessah, da's awright, Doc, but wha's pesterin' ma min' is, will ah go way wid it?

A MODERN NURSERY RHYME

Baby, by,
Here's a fly!
Let us kill him, you and I,
Ere he crawls
Up the walls,
And dire ill befalls.
I believe on those six legs
Are a billion typhoid eggs;
There he goes
On his toes,
Tickling Baby's nose!
Now we must run right away
For the antiseptic spray,
To sterilize
Where the fly's
Little microbes stray!
Only think, 'neath his two wings
Lurk all sorts of hard-named things!
Every fly
Fresh supply
Of these horrors brings!
So we have to analyze,
Neutralize and immunize,
Vaporize,
Sterilize,
Just to fight the flies!

By Carolyn Wells.

THE WISDOM OF THE EAST

An Arab proverb runs as follows:

"The world is supported by four columns:
The justice of the great
The prayer of the righteous
The bravery of the valiant, and
The science of the physician."

INDOOR SPORTS

He who hesitates will never win with a pair of deuces.

A card in time fills a flush.

"It's all in the draw," said the cowboy as he put his smoking forty-eight back in the holster.

Time was when the eighteenth was a hole and not an amendment.

SOME ISMS

"The worst of all isms," said the lecturer, "is pugilism."

"Pardon me, my friend," rejoined a man who had just entered the hall on crutches, "but I know a worse one than that."

"What is it?" asked the lecturer.

"Rheumatism" said the other.

THE OLD ONES ARE THE BEST

A doctor was questioning his patient's wife: "Does your husband grind his teeth in his sleep?"

"Goodness me, no!" was the reply. "I never allow him to wear them in bed, doctor."

DEFINITIONS

1. SCIENCE.—Two and two make four.
2. CHRISTIAN SCIENCE.—Two and two make anything from three to nine and a half.
3. ECONOMICS.—A system for explaining the high cost of living.
4. CHIROPRACTIC.—The apotheosis of the backbone.
5. ENGLISH.—A language spoken by 2 per cent. of the population of the British Isles.
6. HYPOCHONDRIAC.—A pleased pessimist.

Here's Walter Hagen showing his son,
How to make a hole in one.
An even five is the age of the lad,
But he swings an iron like his dad.
They keep their health with this good old game.
Go thou, dear reader, and do the same.

(Continued on adv. page 8)

For *Baby's health*—Milk Sugar Merck

Merck Baby Products

Milk Sugar Merck
Barley Flour Merck
Zinc Stearate Merck
Talcum Powder Merck
Boric Acid Merck
Liquid Petrolatum Merck
Sodium Bicarbonate Merck

Ask your doctor

—a natural baby food for making modified milk.

Of the highest purity and long recommended by physicians.

In Merck's sealed canisters

All Merck Baby Products are prepared for baby's health and comfort. Scrupulous care, for baby's safety, is taken in their preparation.

At your druggist's

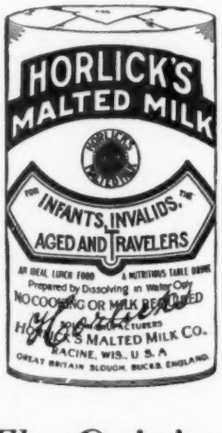
MERCK & CO.

45 Park Place
New York

28 St. Sulpice St.
Montreal

Merck

A HEALTH FACTOR IN MANY HOMES


HORLICK'S
MALTED MILK
INFANTS, INVALIDS, AND TRAVELERS
AN IDEAL LUNCH FOOD & NUTRITIOUS TABLE DRINK
Prepared by Dissolving in Water Only
NO COOKING OR MILK REQUIRED
HORLICK'S MALTED MILK CO.
RACINE, WIS., U. S. A.
GREAT BRITAIN SLOUGH, BUCKS, ENGLAND

The Original

USED AND ENDORSED BY THE MEDICAL PROFESSION OVER ONE-THIRD OF A CENTURY.

Strengthening and healthful as a table beverage. Useful in nervous, anaemic and digestive disorders and as an upbuilding nutrient generally. Reliable in the feeding of infants and growing children.

Serve "Horlick's" at the table. Avoid imitations at the fountain.

Sample and literature prepaid on request.

HORLICK'S
Racine, Wis.

OH! VERY WELL!

(Continued from page 202)

DR. PEPYS' DIARY

April 6.—This day at a concourse of physicians come to see an exhibit of ye books of ye ancient masters of medicine and very interesting too. There also a discussion of ye methods used in teaching and Prof. Sixsounde hath quoted from ye ancient Samuel Johnson as told by his Boswell: "People have now-a-days got a strange opinion that everything should be taught by lectures. Now, I cannot see that lectures can do so much good as reading the books from which lectures are taken. I know nothing that can be best taught by lectures, except where experiments are to be shown. You may teach chemistry by lectures. You might teach making of shoes by lectures!"

April 9.—Reading during ye week-end a newly published work "Impromptu," and ye same a terrible satire on ye Eddyites and an attack on militarism. Ye Eddyite attack taketh ye form of showing how one believeth ye best while ye worst continueth to develop and pertain, so that at ye very time when ye testimonial is being offered as to ye power of ye same ye reader knoweth that ye actual condition is ye worst possible. A fine satire for him that readeth understandingly but unfortunately not so many of such readers among ye people.

April 10.—This day great laughter at Dr. Dove, for someone hath called him and asked his opinion of a person who would arise and go horseback riding at two o'clock in ye morning and he hath said that ye person quite certainly must be insane. "Who was it," asked ye doctor. "Why, Paul Revere," hath replied ye man who called him, and now ye doctor seeketh everywhere with blood in ye optic.

Happy Health Hints

Colorado Springs Gazette

People would have better health if they would remember that the stomach is a work-room and not a play-house.

THE HEIGHT OF PARSIMONY

Malcolm McCregor tells a mean yarn.

"A miserly gentleman woke up one morning," related Mr. McGregor, "and discovered his wife dead. So he went into the hall and leaning over the railing above the stairs, called to the cook below:

"Cook just one egg this morning, Mary."—*Pickup.*

The Faux Pas

Judge

"Every man eats too much," cried the lecturer.

As he was being carted to the hospital a policeman informed him that, admission being free, his audience had consisted chiefly of Greenwich Village residents.

THE DOCTOR'S LAMENT

Behold the summer comes apace, and I am bound unto this place—babies now come with summer complaint, perhaps with rickets or venereal taint; the women sneeze with so-called summer colds; hay fever, too, its watery eyes unfolds; vacationists drink water from some sewer, then follows typhoid and a death is sure; the baseball player sprains his ankle or an arm, and boys by fire crackers come to harm. Who then would be a medico? Gosh! what a life! Without a moment's rest that's free from strife against the powers of death and dread disease—Oh! for an hour in which to do just what I please!

JUST'S FOOD
A MALTOSE-DEXTRIN PRODUCT

Made from cereals only. Used with fresh cows' milk in Infant Feeding. Beneficial for Invalids, Convalescents, Aged and those suffering from Digestive Disturbances.

Samples and literature on request.

JUSTFOOD COMPANY, SYRACUSE, N. Y.

Sex Education Pamphlets

By

WINFIELD SCOTT HALL, M.D.

Doctors, teachers and parents should see that these carefully written pamphlets are in the hands of every young person at the right age. What is learned from them need not later be unlearned.

FOR BOYS

JOHN'S VACATION—An understanding of the origin of life, based on his observations of animal life and the explanations of his doctor father, is gained by this 12-year-old boy. For boys from 10 to 15.

CHUMS—A doctor's frank talk to his 15-year-old son about the rules for a strong manhood. For boys from 16 to 18.

FOR GIRLS

MARGARET, THE DOCTOR'S DAUGHTER—What a doctor father told his 12-year-old daughter about the origin of life in flowers, fish, birds and animals. For girls from 12 to 14.

LIFE'S PROBLEMS—Truths which every young woman should realize. For girls from 15 to 18.

Prices—Single copies of any of above pamphlets—25 cents prepaid. In lots of four, 75 cents prepaid. Discount on quantities.

American Medical Association
535 N. Dearborn St.
Chicago